

## What's New in STEP 7, Version 5.1?

The following subject areas have been updated:

### ***SIMATIC Manager***

- To translate projects into other national languages, you can edit texts of the project (block titles and comments, for example) outside of STEP 7 with an ASCII editor or a table-editing tool using the menu commands **Options > Manage Multilingual Texts > Export**. You can then import the texts back into STEP 7 using the menu command **Options > Manage Multilingual Texts > Import**. The format of the export file is set as "\*.csv" (comma separated value).
- The complete project data can be loaded into a special memory card of the CPU (new menu commands **PLC > Save Project to Memory Card** and **PLC > Get Project from Memory Card**).
- Using the menu command **Options > Reference Data > Delete**, you can delete the existing reference data.
- You can read about version information on the products installed with their components and DLLs using the menu command **Help > About**.
- When you modify a program, you can run a consistency check on all S7 blocks in the block folder using the menu command **Edit > Check Block Consistency**. In this way, you can better test the effects of interface modifications on other blocks and remedy errors more quickly.
- During the import of new block versions you can adopt the system attributes which you have already defined for blocks of the user program (for example, when uploading a system library). The attributes for each block can be adjusted via a dialog.
- As of Service Pack 3, you can select the function "Assign parameters to technological functions" using the menu command **Edit > Parameter Assignment**. With this function you can easily assign parameters to as well as test the temperature controller blocks FB 58 "TCONT\_CP" and FB 59 "TCONT\_S" that are supplied in the "PID Control Blocks" standard library.

### ***Programming LAD/STL/FBD Blocks***

- The block consistency check is initiated with the new menu command **File > Check and Update Access**.
- You have the possibility of monitoring the called blocks with **Monitor** or with **Monitor with Call Path** when the operating mode is in Test Operation. To do this, you must open the calling block and position the cursor on the desired call (CALL row in STL and Callbox in LAD/FBD). Then, right-click to choose between the **Called Block > Monitor** command and the **Called Block > Monitor with Call Path** command.
- When a block is deleted the block symbol is also deleted.  
This means that sources on a symbolic basis can no longer be compiled if the corresponding blocks have been deleted from the program.  
The symbol is retained when a block is copied or moved.
- As of Service Pack 3, you can use the LAD/STL/FBD editor to program safety programs for S7-300F in the F-LAD and F-FBD programming languages, provided the *S7 F Systems* optional package is installed.
- As of Service Pack 3, you can synchronize the user program with the constant DP cycle. The new OB 61 is provided for this purpose (See Configuring Short and Equal-Length Process Reaction Times on PROFIBUS-DP).

### ***Monitoring and Modifying Variables***

- The table for monitoring and controlling variables has been modified:
  - Columns can be selected.

- A multiple selection is possible.
- All columns can be displayed or hidden.
- A tool tip is offered, for example, for a red row.
- The display format can be edited.
- The dialog box "Customize" has two new tabs ("General" and "Online"); in the "Online" tab the following new options can be selected:
  - Preselection for the online connection: either to the directly connected CPU or to the configured CPU.
  - Warnings can be switched off.
  - "Combine variables" option for enlarging the number of variables which can be monitored.
- The connection can be changed without previously having disconnected the existing connection.
- The monitoring trigger can be defined while variables are monitored.
- Selected variables can be modified by selecting the rows and executing the "Modify" function. Only the highlighted variables are modified.
- Numerous new menu commands, for example:
  - Print Preview ("Table" Menu)
  - Restore Arrangement ("Window" Menu)
  - Establish connection to 1, 2, 3, 4 ("PLC" Menu; for a quick change of already used connections)

### ***Configuring and Diagnosing Hardware***

- It is possible to monitor/modify inputs/outputs when configuring hardware (new menu command **PLC > Monitor/Modify**).
- New modules:
  - In the file "New Modules V5\_1 SP2.PDF" on your STEP 7 CD you will find a list of all modules which you can configure in STEP 7 V5.1 SP2 for the first time.
  - In the file "New Modules V5\_1 SP3.PDF" on your STEP 7 CD you will find a list of all modules which you can configure in STEP 7 V5.1 SP3 for the first time.
- As of Service Pack 2, the ET 200iS is also configurable (only in combination with SIMATIC PDM, see ET200iS documentation).
- As of Service Pack 2, the CPU S7-30xC can be configured (CPU with integrated technological functions, such as, for example, counting, positioning or controlling and point-to-point coupling). For detailed information on the functional scope of the CPUs and the description of the technological functions refer to the S7-300C manual. The individual functions are represented as "slots" in the configuration table - as, for example, with integrated interfaces of a CPU. In order to access the parameter assignment dialog of the required function you must double-click on such a "slot".
- The Diagnostic Repeater is configurable as of Servicepack 2 (see Configuring and Commissioning the Diagnostic Repeater)
- The following function enhancements are available for S7-400 CPUs (V3.0 or higher) as of Service Pack 2:
  - Extended priority classes for asynchronous error interrupt OBs (refer to CPU properties in the "Interrupts" property sheet and Organization Blocks and Program Structure)
  - Identification of a CPU: it is possible to enter a system ID (tag) that is globally unique in the the configuration and that can be retrieved via the module status view and with the user program (refer to CPU properties in the property sheet "General")
  - Support for Local Time in addition to Module Time (refer to CPU Clocks with Time Zone Setting and Summer/Winter Time)
  - For CPUs with DP interfaces: support for DPV1 functionality (refer to What You Should Know About PROFIBUS DPV1)

In the Internet we have published a FAQ dealing with this topic in the Customer Support pages; article ID 7027576. (Title "Change to DPV1"; refer to Automation systems > SIMATIC Distributed Peripherals > PROFIBUS > General).
- Distributed user data can consistently read or written by means of a process image

(see Distributed Reading and Writing of Consistent Data (> 4 Bytes))

- Expanded configuration possibilities for intelligent DP slaves:  
process-image partition (part process image) assignment for S7400 CPU as slave with direct data exchange and hardware interrupt OB assignment for the PROFIBUS partner (for I slaves that can trigger a hardware interrupt by means of user-program control at the DP master)
- Ergonomic improvements for the online function Module Information  
For the Diagnostic Buffer tab, filter results can be displayed (filtering out individual event classes).  
In the Performance Data tab, there is now a summary of information about organization blocks, system functions (SFCs and SFBs), and address areas. All the information about the memory can be found in the Memory tab.  
The graphic representation of scan cycle time with the corresponding monitoring time has been improved through a horizontal layout of the time axis. In this representation, it is easier to identify times that fall below or exceed the monitoring times assigned as parameters.
- As of Service Pack 1, you can exchange assembled racks, C7 devices, and DP slaves (see Exchanging Racks, C7 Devices, and DP Slaves)
- Clearer function **Edit > Go To > PROFIBUS Stations**. The name of the associated PROFIBUS has also been included in the list of the master systems. Also, the actual name of the master system is now displayed. As before, by selecting a master system, you can update each particular list of stations of this master system.  
The DP master, stations without PROFIBUS address, and also the master system itself have been included in the list of stations. You can go to all stations of the list.  
Under addresses, the PROFIBUS address of the station is displayed. For stations without a PROFIBUS address (for example, non-coupled I slaves), "---" is displayed, and for the master system, "DP master system" or "PA master system" is displayed. Under Name, the current name is always displayed. Under Master, the rack and slot are displayed for the DP master, for example, "R0/S2.1" .
- As of Service Pack 3, you can use a simplified and standardized mechanism to update firmware in programmable modules (See Updating Firmware in Modules and Submodules)
- As of Service Pack 3, GSD revision 4 is supported. This includes functions for F-parameters, interrupt blocks as well as isochronous mode (constant) (See What You Should Know About GSD Revisions)
- As of Service Pack 3, the DPV1 mode for ET 200S is supported (See ET 200S in DPV1 Mode)
- As of Service Pack 3, you now have the capability to display and edit programs that are created with later versions of STEP 7 for future modules. (See Displaying Modules Configured with Later STEP 7 Versions or Optional Packages)
- As of Service Pack 3, you can have the module status of PI field devices and DP slaves displayed "after" a Y link. (See Displaying the Module Status of PA Field Devices and DP-Slaves After a Y-Link).

## **Configuring Networks and Connections**

- New columns in the connection table: local and partner interface as well as local and partner address. The columns can be individually displayed and hidden. In this way, the connection path can be read in its entirety from the connection table and, for example, it can be sorted according to interfaces or subnets.
- The settings in NetPro are saved when you exit the project and are available again when you reopen the project (even on another programming device).
- The subnets can be more easily distinguished because they are displayed on the screen in different colors.  
The colors can be turned off in the print-properties dialog when you are printing out a graph. In addition, there is a zoom setting that makes it possible to adjust the network representation to make the best use of the number of pages available.
- In addition to the bus parameters for PROFIBUS, bus parameters for other subnets (MPIs) can be printed out.

- Support of the connection configuration (S7 connections) and connection status for the new WinAC slot CPUs (CPU 41x2 DP PCI)
- Stations can be exported and imported along with network data (as of Service Pack 1, see Importing and Exporting Stations in the Network View)
- The local ID can be edited directly in the connection table ; columns that cannot be edited directly have a gray background (as of Service Pack 1)
- The sequence of columns in the connection table can be configured any way you want (menu command **View > Display Columns**)
- For S7-300 CPUs, you can configure S7 communication by means of the interface of a CP (loadable S7 communications; see Blocks for Different Connection Types)
- You can download selected NCM connections, for example, to download only the consistent connections to a station (as of Service Pack 1)
- You can assign DP slaves to your master system automatically for a better overview in the network overview (menu command **View > Rearrange**), as of Service Pack 1
- Improved printing functions, for example, transmit different print jobs at the same time or print out several connection tables at one time (see Printing the Network View and the Connections, as of Service Pack 1)
- As of Service Pack 2: complete download to PC station is possible (refer to Download to a PC Station); Routing via PC stations is possible as well
- As of Service Pack 2: for OPC Servers as connection end point S7 connections can be configured with enhanced connection properties (refer to the properties dialog of the corresponding S7 connection, "OPC connection parameters" property sheet)
- As of Service Pack 3: Equal-length bus cycles for PROFIBUS-DP used with ET 200S can be synchronized with I/O devices. Similarly, equal-length bus cycles for WinLC RTX V3.1 can be synchronized with the user program. (See Configuring Short and Equal-Length Process Reaction Times on PROFIBUS-DP)
- As of Service Pack 3: SIMATIC PC stations can also be assigned, which means that they can now be highlighted in the network view and in the SIMATIC Manager (See Highlighting the SIMATIC PC Station to be Configured in the Network View)
- As of Service Pack 3: The window positions and the character set settings are saved in a project. (Menu command **Window > Save Arrangement in Project**. In the settings dialog, the option is now called "Save window arrangement in the project on exit - Menu command **Options > Customize**, "Editor" tab).

### **Reference Data**

- With the menu command **Edit > Delete Symbols**, you can delete symbols you are not using in the Symbols Not in Use view.
- With the menu command **Edit > Edit Symbols**, you can assign symbols to the selected addresses in the Addresses without Symbol view.
- The window arrangement is saved when you exit the application, no matter what view is displayed (cross references, program structure, etc.). It is then restored when you select the menu command **Window > Save Arrangement When Exiting**.

### **Configuring Messages**

- You can also create user-defined diagnostic messages for M7 programs.

### **CPU Messages**

- In the CPU Messages application, you have various options for editing incoming messages. With the menu command **View > Automatic Shift**, the newly incoming messages are scrolled into the window and selected. With the menu command **View > Bring to the Foreground**, the window is brought to the foreground and the message is displayed. With the menu command **View > Leave in the Background**, the message is displayed in the window, but the window remains in the background.

With the menu command **View > Ignore Message**, messages are not displayed in the window, and they are not saved in the archive.

- With the menu command **PLC > Remove Module**, you can remove the highlighted module from the list.
- With the Settings CPU Messages dialog box, you can adjust the size of the archive, save the list of registered modules, and reestablish the connection state at the start. You can also display the info texts at ALARM\_S/SQ.

### ***Reporting System Errors***

- With the Report System Error function, STEP 7 offers a convenient way to display diagnostic information supplied by the component in message form. The necessary blocks and message texts are automatically generated by STEP 7. All you have to do is load the generated blocks into the CPU and transfer the texts to connected HMI devices. You can find a thorough overview of the diagnostic information supported for various DP slaves under Supported Components and Functional Scope
- You can select the Error Obs you want to evaluate (as of Service Pack 2).
- The CPU can be set to STOP in dependence on the Error Class (as of Service Pack 2).
- You can configure the user block interface (as of Service Pack 2).
- H Systems, the Diagnostic Repeater and the ET200X are supported (as of Service Pack 2).
- As of Service Pack 3, SIMATIC PC stations (Soft-PLC, Slot-PLC) are supported.
- As of Service Pack 3, messages and info texts can have more than one line.

### ***Standard Libraries***

- As of Service Pack 3, the "PID Control Blocks" standard library contains the FB 58 "TCONT\_CP" temperature controller for actuators with continuous or pulsed input signals and the temperature controller FB 59 "TCONT\_S" for integral-type actuators.

### ***Sample Project***

- As of Service Pack 3, the STEP 7 CD also contains the new sample project "ZEn01\_13\_STEP7\_PID-Temp" for the FB 58 and FB 59 temperature controllers.