HIMA SAFETY NONSTOP

Release Notes

Content

1 New SILworX V7.18

This document describes the improvements and new functions of V7.18 compared to the previous versions:

- Chapter 2 describes the new functions and improvements.
- Chapter 3 presents the resolved problems.
- Chapter 4 specifies the current restrictions of V7.18.
- Chapter 5 describes the migration procedure from the previous version.
- Chapter 6 provides references.

1.1 Compatibility with the PES Operating System

SILworX V7.18 can be used for the following HIMA system families:

- HIMax
- HIMatrix F systems
- HIMatrix M45

1.2 Compatibility with Existing Projects

SILworX V7.18 can convert and edit projects that were created with a previous version. Generating the code for an unchanged project does not cause the CRC to change, except for the following cases:

- User-defined data types, see Chapter 3.2, point 3.
- X-OPC server, see Chapter 4.1, point 4.
- X-OTS, see Chapter 4.1, point 4.
- Licenses for specific system features, see Chapter 4.1, point 12.
- safeEDR, see Chapter 4.1, point 18.

1.3 Compatibility with the PC in Use

The minimum requirements for the computer used to run SILworX are specified on the corresponding **HIMA DVD**.

In particular with very large projects, old PCs may require long processing times and thus be inappropriate for this task. Therefore, state-of-the-art computers should be used whenever possible. Enhanced hardware features such as computing power and memory space result in improved performance.

2 Improvements of V7.18

This chapter describes improvements of V7.18 compared to versions prior to V7.

1 Support of new features for HIMA hardware and operating system

Fast Start-Up can be set up for HIMatrix F10 PCI 03, F30 03, F31 03, F35 03, F60 CPU 03 with processor operating system V11 and higher.

2 Additional hotkeys (shortcuts) for executing functions quickly

Additional shortcuts for executing functions are available in the structure tree and in editors.

3 Improvements in dialog boxes for selecting files and directories

- The dialog boxes for selecting files and directories now also display the files.
- The dialog boxes for selecting files and directories now also accept paths like the following: `\\«server name»\«directory name»\...`
- The dialog boxes were enlarged so that paths can be read more easily. [HE22868]

4 Improved error messages when validating and generating structured text

5 The *Set Page Size* dialog box now only contains the values that can be actually set

6 Version comparison for binary files

The version comparator includes a detail view for <Program>.ldb. The detail view displays changes that do not directly result from a change made by the user to a POU such as a modification of the stack size (Chapter 3.2, point 3) or a different handling of the retain timer (Chapter 3.2, point 2).

3 Problems Resolved in V7.18

This chapter describes problems in versions prior to V7 that have been resolved in V7.18.

3.1 Hardware Editor

1 The *Port Settings* dialog box can be closed by clicking **OK**

[HE25731]

2 Correct structure details in cross-references to redundancy groups

Cross-references to redundancy groups contain correct details on the structure paths. [HE24760]

3 After hardware has been copied, global variables that no longer exist are marked as conflicts

Example: the resource Res1 contains a global variable GV1, the resource Res2 does not.

If, e.g., GV1 is assigned as an input on Res1, copying a module from Res1 to Res2 causes a conflict associated with GV1 in Res2. GV1 is marked in red. [HE25136]

4 Comparator detects redundancy group after moving a module

If a module from a redundancy group is moved to another position and code is generated, the I/O comparator recognizes the redundancy group as still existing. In the previous version, the comparator reported the deletion of a redundancy group and the creation of a new one. [HE21463]

5 Check of the watchdog time against the safety time for remote I/Os

For remote I/Os, the watchdog time is checked against the safety time (safety time ≥ 2*watchdog time). [HE25316]

6 No termination in connection with the deletion of a struct variable while the A&E Editor is open

In such a case, the previous version terminated. [HE24498]

7 The Hardware Editor displays the symbol of the X-HART 32 01 module in yellow

Since X-HART 32 01 is a SIL 3 module, its symbol is displayed in yellow and no longer in gray. [HE22353]

8 Redundancy group names follow a new naming scheme

The redundancy group names are defined by incrementing the suffix. [HE25187]

9 Loading HIMatrix standard remote I/Os with *Minimum Configuration Version* set to a value greater than V2

For HIMatrix standard resources, setting *Minimum Configuration Version* to a value greater than V2 no longer causes SILworX to set the corresponding remote I/Os to a value greater than V2.

The minimum configuration version is set to a value greater than V2 in the following cases:

- Directly, if the parameter is manually set
- Indirectly, if *Max. Duration of Configuration Connections [ms]* is set to a value greater than 6 ms. [HE25128]

10 System variable *Restart [BOOL] ->* renamed in HIMax CI channels

The *Restart [BOOL] ->* system variable used in HIMax counter input channels was renamed to *Lock Restart [BOOL] ->.* [HE19718]

3.2 User Program and POU

1 Masked line breaks at specific positions no longer allowed in C++ code

Masked line breaks are no longer allowed in block comments and at other critical positions in the C++ code. A line break masked through a \ character belongs to the comment. In these cases, the code generation aborts with an error message.

Example of such a comment composed of 3 lines:

```
/\
* This comment contains 2 masked line breaks *\
/
```

Existing C++ function blocks must be corrected and imported again. [HE24925]

2 Retain timer elements now only measure the runtime within the user program

All the timer elements, i.e., TON, TOF, TP, action blocks and SFC steps with the retain attribute, now only measure their runtime while the user program is in RUN. As long as the user program is not in RUN, the timer elements interrupt the time measurement and resume it after a user program warm start.

Notice: User programs with *Code Generation Compatibility* set to < *V7* behave like in SILworX up to V6, e.g., they measure the runtime even if the user program is not in RUN. If this occurs, SILworX V7 and higher issues a warning.

Setting *Code Generation Compatibility* to *SILworX V7* causes the CRC to change. [17252]

3 Improved stack calculation for user-defined data types

In very seldom cases, the improved stack calculation may change the stack size and cause the CRC to change. The change is displayed in the version comparator. [HE25801, HE25870]

4 Array variable in value field with type definition out of the validity range

If both of the following conditions were met, the previous version terminated after starting the verification process and opening the POU:

- In the POU, an array element was used in a value field.
- The corresponding array data type was out of the validity range. [HE25368]

3.3 Graphical Editors

1 Extending function blok instances and open line ends

If the two following conditions were met, extending function block instances could cause the previous SILworX version to terminate:

- The newly available connections resulting from the extension were immediately docked onto open line ends.
- Docking was not possible due to the incompatibility of the data types. [HE23898]

2 Unfavorable positioning of objects in the FBD Editor

In the previous version, objects with open line ends could be moved by drag&drop or using hotkeys such that they appeared as they were connected to other objects. These objects could be even positioned directly behind other objects. [HE24238]

3 Limited width for function block instances

The width of function block instances was limited to a range of values:

- The minimum value is 2.
- The maximum value is 65535.

The default value is still 10. The change avoids problems when moving narrow function block instances. [HE25718]

4 Non-decimal numbers are possible for array indexes

The index of an array can be specified with a basis other than 10, e.g., index 11, as follows:

- as a binary number in the form `2#1011`
- as an octal number in the form `8#13`
- as a hexadecimal number in the form `16#B` [HE25418]

5 Thicker selection frame in the graphical editors

The linewidth of the selection frame for FBD Editor and Hardware Editor has doubled and is therefore better visible. [HE24920]

6 Replacement of function block instances by drag&drop

When function block instances were replaced by drag&drop, the previous version terminated if the following conditions were met:

- The function block instance contained ports connected to open line ends.
- The dragged function block did not hide the ports connected to the open line ends. [HE25996]

7 Cross-references to global variables with struct data type

Elements of global variables that have struct data type and are used in structured test function blocks are properly displayed in cross-references. This also applies if the global variables that are used in the function blocks have the same name as the elements. [HE25988 und HE26017]

3.4 Online

1 More significant error message during the warm start of a user program without retain variable

The error message is displayed in the confirmation dialog box of the **Warm Start** command. [HE24836]

2 **Write via MAC** for setting up the *Responsible* attribute and the system bus mode

Write via MAC can be used to configure the following settings:

- *Responsible* attribute
- System bus mode
- Gateway

[HE25763]

3.5 safeethernet

1 Warning during reload code generation for safe**ethernet** connection

If two PES, A and B, are connected via safe**ethernet**, and no dual configuration is loaded in PES B, SILworX issues a warning in connection with the following sequence:

a The safe**ethernet** connection is changed causing the signature to change.

b Reloadable code is generated and loaded into PES A through reload. In PES A, the dual configuration state is now *Updated*.

c Reloadable code is generated again for PES A. SILworX removes the dual configuration.

The SILworX V7 code generator reports that no suitable version has been loaded into PES B! [HE25678]

2 Code generator warning if the safe**ethernet** communication partner is a proxy resource

The code generator issues a message warning that the communication partner must be updated after a dual configuration has been created. This warning is also output if the communication partner is a proxy resource, i.e., the actual resource is not contained in the project. [HE25900]

3 Undone change issues warning about interruption of safe**ethernet** communication

The following sequence causes a warning to be issued about the interruption of the safe**ethernet** communication:

- safe**ethernet** configuration has changed and a reload is performed to load the change into the resource.
- The change is undone.

The code generator issues a warning about the interruption of the connection prior to an ensuing reload. [HE25899]

4 Error message when reload capability is lost due to implicit change of *Minimum Configuration Version*

Example: If the only safe**ethernet** connection set to *V6 and higher* is deleted (all other safe**ethernet** connections are set to *Prior to V6*), the whole safe**ethernet** configuration is reset from *V6 and higher* to *Prior to V6.* Code is no longer reloadable.

In this case, an error message is generated. [HE25818]

5 The **Go to** function operates properly on variables in safe**ethernet** connections, even in connections to remote I/Os. [HE25858]

6 After the safe**ethernet** connection was lost, channel data is marked in the Control Panel as up-to-date

If a safe**ethernet** connection was interrupted and is restored, the channel data is marked as up-to-date by no longer being grayed out. [HE25863]

3.6 Protocols

1 Page with protocol properties no longer in the protocol documentation

The page that contained protocol properties was removed from the protocol documentation. As a result, the page numbering is more consistent. [HE20077]

2 Protocol names may contain more than 32 characters

The code generation truncates the names to the length defined for the protocol type. [HE22341]

3 Changed representation of variables with several bytes in the Modbus Editor

Variables with odd byte address and composed of several bytes are represented in the *Register.Bit* column as "0.?" instead of "0.0". [HE25556]

4 When the variables are entered in the Modbus editor, the byte.bit address is calculated as "Register*2"

[HE25592]

5 OPC: Transmission of read/write data

The previous version created an invalid configuration if the following conditions were met:

- One or several variables were configured for the transmission in both directions, i.e., as read/write data.
- The variables with transmission direction from the PES to the OPC server were not in the first fragment. The fragments were sorted by names.

Such a resource configuration cannot be loaded into the OPC server!

This also applies to safeEDR connections. [HE25694]

3.7 General

1 Table content immediately visible after setting a filter for a table

In the previous version, setting a filter caused the table to shrink to a row preceded by a plus sign (+). The filtered table content was only visible after clicking the plus sign. In the current version, the selection is also maintained. [HE25054; HE24482]

2 Improvements of version comparator for structured text

The execution order is consistently represented in the comparator for structured text:

- The inputs and outputs have different numbers.
- The inputs and outputs are numbered beginning by 0.
- The list first specifies the inputs, then the outputs.

After using **Go to**, the version comparator marks the entire sub-expression. [HE25438]

3 Improved error messages when validating and generating code for structured text

4 **XML Import** and **XML Export** menu functions properly available

In the previous version, the **XML Import** and **XML Export** menu functions were also available in the context menu of objects for which the function did not exist.

5 Specification of a user-defined force duration

The default value set in the entry field for the force duration is Not limited, but can be replaced by a user-defined value. [HE24762]

6 The watchpage displays the force state of the selected program

A watchpage located in SILworX window mode next to the Force Editor displays the force state of the selected program, even if local variables of another program are selected in the Force Editor. [HE25434]

7 Version comparator with only one version

If only one version is selected in the version comparator, the detail views for *System Data* and *Data Layout and Transport* contain the text "This view is empty". [HE22834]

8 System parameter *Code Generation Compatibility* in the program properties

The previous setting **SILworX V4** of the system parameter *Code Generation Compatibility* was renamed to **SILworX V4 – V6b** since this setting applies to all SILworX versions V4…V6. [HE22563]

4 Restrictions

When using SILworX versions V7.x, take the following restrictions into account.

If the following instructions are observed, the restrictions have no influence on safety and on the availability of the code generated for a controller.

4.1 Restrictions of V7.x

4.1.1 General

1 Sequential function chart: No indication of deadlocks

Combined use of selection and simultaneous nodes causes deadlocks, i.e., undefined states in which either all steps or no steps are active. SILworX does not warn the users. [HE17716]

2 CRC change during OPC configuration

Generating a new code for X-OPC or X-OTS in a project converted from a previous version causes the CRC of the `opc.conf` file to change.

3 Adding the 64th M45 module can cause SILworX to terminate

The maximum number of modules permitted for the HIMatrix M45 system is 63, including the processor module. Trying to add an illicit 64th module can cause SILworX to terminate. [HE24522]

4 The range of values for *Default Gateway* and **Routing**->*Gateway* are not completely checked

The range of values for the following parameters is not completely checked in the forms for entering the Ethernet parameters:

- *Default Gateway* in the **Module** tab
- *Gateway* in each table line of the **Routing** tab [HE25854]

5 User program size in the Control Panel and version comparator

The user program size displayed in the Control Panel may differ from that displayed in the version comparator. The Control Panel displays the size of the memory actually used. This value is usually higher than the value indicated in the version comparator. The values may also be identical.

This deviation is due to technical reasons and does not mean that a fault or a security problem has occurred.

6 Attempting to start a download during the code generation may cause SILworX to terminate. [HE24758]

7 SILworX may not always be started under Windows 8

Under unspecified circumstances, it may happen that SILworX will not start under Windows 8.

Workaround: Reboot the computer. In this case, an error message also recommends rebooting the PC.

8 Force messages with no reference to target object

Force messages in the logbook provide no details on the object they refer to.

Example: The user cannot discern from which user program forcing was started. [HE25923]

9 Conversion of projects created with SILworX V4

In SILworX V4, deletion actions could cause objects to remain in the database, but be no longer editable. These objects did not affect the rest of the project, but they were reported during the project integrity check.

Projects that were created in SILworX V4 and V5 and contain such "residual" objects are very unlikely convertible to SILworX V6 and V7. The likelihood is particularly high if the projects contain user-defined data types.

Workaround: Remove the objects found during the integrity check prior to converting the project. The following steps represent the simplest procedure and must be performed in the previous SILworX version:

a Archive all the child nodes of the project that are positioned in the structure tree under the project, except for **Programming and Debugging Tool**.

b Create a new project in the previous SILworX version.

c Delete the **Configuration** node in the new project.

d In the new project, restore the configuration archived in step a) and, if existing, additional child nodes of the project.

The project just created should be convertible to the current SILworX version. [HE25994]

10 CRC change in connection with safeEDR

Converting projects that were edited in SILworX V6.114 and used safeEDR to SILworX V7 may cause the CRC to change.

11 Undeletable generic module in HIMax proxy resource

In a SILworX proxy resource of HIMax type, a generic module previously inserted into a rack can no longer be deleted.

Workaround: Delete the entire rack and create a new one. This workaround only applies to rack 0 if the rack ID was previously changed to a value ≠ 0. [HE26020]

12 Invalid CSV file name prevents the opening of the dialog box for selecting files

The dialog box for exporting a table as CSV file contains a field for typing the file name. If an invalid file name is typed into this field and **OK** is clicked to start the export, the export is then attempted accordingly. Afterwards there is no reaction if **…** is clicked in the CSV export window to open the dialog box for selecting the file.

Workaround: Type a valid name and click OK to start the export. Afterwards, the dialog box for selecting the file can be opened again.

In general, use the dialog box for selecting the file name instead of typing the name to reduce the probability of entering an invalid name. [HE26057]

13 Unnecessary system variable for redundant HIMax counter modules

The detail view of a redundancy group composed of HIMax counter modules, X-CI 24 01 or X-CI 24 51, contains the system *variable -> Count.Read. (Revolv.) [UDINT]* A global variable can be assigned to the system variable. The system variable, however, is always set to 0 and is therefore needless.

Notice: Deleting the assignment of a global variable to *-> Count.Read. (Revolv.) [UDINT]* in a project causes the CRC to change. [HE26041]

14 Deleting and re-inserting many objects during a load procedure

The number of objects that can simultaneously be added to a resource during a load procedure (download or reload) is limited to the maximum number of objects within the resource. During a load procedure, it is only possible to add as many objects as previously allowed. Deleting objects in the same load procedure does not increase the number of insertable objects.

Insertable objects are, e.g., programs, safe**ethernet** connections, hardware modules, remote I/Os or protocols.

Moving objects, e.g., modules, to another rack is the same as deleting them and inserting the new ones.

Workaround: Delete and insert the new objects in separate load procedures. [HE25955]

15 SILworX may terminate if the project is defective

If a warning about an open connection occurs during code generation, this may indicate a defective project. If an attempt to use **Go to** on this warning to access the POU causes the

appearance of an internal error message in the logbook, then the project is indeed defective. In this a case, the generated code may not correspond to the expected program logic! Additionally, various user actions such as the deletion of a variable or the offline simulation may cause SILworX to terminate.

Workaround: Copy the logic of the affected POU to a new POU and delete the previous POU. [HE26126]

16 Extended selection may result in obsolete force values and force switches

The following conditions may cause SILworX to use obsolete force values and force switches for local or global variables:

- More local or global variables are selected in the Force Editor than they can be displayed.
- The selected variables were already forced.
- One or several variables are added to the selection by clicking and simultaneously pressing the CTRL key.
- The *Edit Local Force Data* or *Edit Global Force Data* dialog box is displayed.

When browsing the dialog box *Edit Local Force Data* or *Edit Global Force Data*, the hidden variables are then likely to have obsolete force values and force switch settings.

Workaround: Browse the Force Editor prior to opening the dialog box to visualize all the selected variables and ensure that they receive the correct values. [HE26501]

4.1.2 FBD Editor

1 Information on global variables used as VAR_EXTERNAL is not displayed

If global variables with Struct or Array data type are used as VAR_EXTERNAL, the FBD Editor does not display for sub-elements the information entered in the column *Initial Value, Description, Additional Comment and Technical Unit* [HE19688]

2 Conflict resulting from changing the constant attribute for global variables after their use

A conflict occurs during the code generation, if a global variable is used as VAR_EXTERNAL and is set from Constant to Changeable or vice versa, when a value is assigned to this VAR_EXTERNAL and the global variable is constant.

Workaround: Re-insert the variable at all positions in which it is used. [HE24487]

3 Conflict icon remains visible, in spite of removed conflict

In the following cases, the conflict icon remains visible although the invalid action was canceled and the valid value displayed:

- Invalid name is entered for a variable.
- An existing sequence number is assigned to an interface variable.

Workaround: Start verification or update process. [HE24339]

4 SILworX terminates if standard function block instances are copied to the logic and a user-defined data type with the same name exists

If a user-defined data type (array or strict) is used and has the same name as the standard function block, e.g., `AND`, SILworX terminates when attempting to copy an instance of a standard function block to the logic.

Workaround: Do not assign data type names that are used for other POUs, in particular for standard function blocks. [HE26419]

4.1.3 Online

1 Copying obsolete online values

In the Force Editor and other force tables, online values can be copied to the clipboard. If values that were not located in the visible window are copied, the values may be obsolete. [HE23314]

2 Grayed-out context menu function during online connection

If a PES online view is available (Control Panel or Hardware Editor), the **Reset Statistics** function is grayed out in many context menus. This affects all context menus in the structure tree and many more. The **Reset Statistics** function has a reference to the clicked object in very few cases and is therefore superfluous. [HE26031]

3 Activation of VLAN connections to ports 1…4 only possible when loading a configuration

The VLAN connections from the PC port to ports 1…4 cannot be activated online, but only when a configuration is loaded. The VLAN connections can be deactivated online. [HE26160]

4 Setting up mirroring online

The mirroring settings may not be changed online for the Ethernet connections of processor modules X-CPU 31 and M-CPU 01.

Workaround: Change the mirroring settings in the resource configuration and load the new resource configuration. [HE26467]

4.1.4 safe**ethernet**

1 X-OPC server V3 terminates in connection with reload

SILworX V6.114 and higher can generate reloadable code for the X-OPC server. This capability is planned for a future version of the X-OPC server. X-OPC server V3 is not reloadable and terminates after reloadable code has been loaded.

Workaround: Do not generate reloadable code for X-OPC server V3. Deactivate the setting for reload in the dialog box for code generation. [HE25714]

2 Operator action in the Global Variable Editor during safe**ethernet** code generation

The following sequence results in an infinitive loop and SILworX must be terminated through the task manager:

a The Global Variable Editor was opened and left open.

b The multi code generation was started for safe**ethernet.**

c The **Cross-Reference in Column** function in the Global Variable Editor was used.

Workaround: Do not use **Cross-Reference in Column** while generating the code. [HE25122]

3 Error message in connection with a global variable having the source and the drain within the same remote I/O

If a global variable has the source and the drain in the same remote I/O, SILworX issues an error message informing that the variable has more than one source. For such variables, SILworX also configures a safe**ethernet** connection between controller and remote I/O, so that the variable is written to from both the physical input as well as from the safe**ethernet** communication.

Workaround: Use two global variables. [HE26061]

4.2 Special Features

When using SILworX, the described special features must be observed.

4.2.1 General

1 In the Hardware Editor, the scaling settings for an analog value are read as REAL

SILworX reads the values specified for the vertices of an analog value as REAL (at 4 mA and 20 mA). They are, however, further processed as LREAL. LREAL can also be used in the user program. This restriction is only relevant with very large or very small vertex values. [HE16388, Restriction]

2 Logic operations of BOOL variables having values that originate from external systems can provide results that differ from those expected.

The cause is that the coding of BOOL values used in the third-party system deviates from the coding used in the HIMA system.

Two **workarounds** are possible:

- The external system only provides 0 for FALSE and 1 for TRUE.
- A correction circuit is implemented in the user program for all relevant BOOL variables to normalize the value to 0 or 1:

  Non-normalized variable -> AtoByte function block -> AtoBOOL function block -> normalized variable [HE13042, restriction]

3 Impossible to save certain changes in a SILworX editor

After specific changes are made in an editor, the message 'Impossible to save changes' appears while attempting to save. After confirming the message, however, the changes are saved.

If the SILworX editor is then closed and re-opened, the message 'The required data is being processed' appears.

An example of changes in which this problem occurs is the cyclic renaming of variables (A => B, B => C, C => A).

Workaround: Avoid exchanging names.

If required, restart SILworX. [HE11613, Restriction]

4 Variations of the cycle time during LREAL calculations

The cycle times can strongly vary during calculations with variables of type LREAL. To measure the watchdog time, the cycle time must be determined under realistic conditions.

[HE12115, Restriction]

5 Sequential function chart: Step-internal TON starts a cycle later than normal TON

A reload is performed and leads to the following changes:

- A new step is added and must be active immediately after the reload.
- A TON function block with the input permanently set to TRUE is added.

Afterwards, the step-internal TON starts one cycle later than the TON function block in the program logic. [HE16288, Restriction]

6 If the diagnostic view is opened during a system login and the connection is closed, SILworX offers the module login when attempting to re-establish the connection.
[HE11926, Restriction]

7 Online help associated with a POU not printable

The document management cannot print the content of the online help associated with a user-defined POU.

Workaround: Use Windows to display the online help content and print out the individual topics. [HE14244]

8 Value of user program's system variables during the online test and offline simulation

The value of user program's system variables is not displayed during the online test and offline simulation:

- The OLT field is empty.
- The value of digital system variables is not represented by the color of the corresponding line.
- The Process Value column in the System Variables tab of the Object Panel is empty.
- The Force Editor contains no system variables.

Workaround: Most of the information is displayed elsewhere, e.g., in the Control Panel. To display it in the OLT, connect the system variable to a variable (VAR_TEMP) and connect this variable to an OLT field. Forcing can only be performed in HIMax if the program is connected to the system variable via a variable. The variable can be forced. [HE15396, Restriction]

9 Import of export files from a previous version

It cannot be ensured that key terms in the export or import files (.CSV, .XML) do not change between SILworX versions. If this occurs, SILworX imports the corresponding data as default values and issues an error message.

Example: The data type for the **English** language setting was denoted Data Type in versions up to V5.xx, and Data type in V5.xx and higher. When an export file is imported from a version up to V5.xx, SILworX creates all the variables with the default data type BOOL.

Workaround: Adjust the corresponding key words in the file to be imported. [HE21691]

10 Converting a safe**ethernet** connection from *Prior to V6* to *V6 and Higher*

When converting from a version prior to V6 to V6 and higher, observe that the timing master and its behavior may be changed. Refer to the SILworX communication manual (HI 801 101 E) V6.01 and higher for more information on the timing master.

Workaround**:** Set the timing master explicitly. [HE25666, Restriction]

11 Misleading indication of the force status for local forcing in connection with HIMatrix standard systems

For HIMatrix standard systems, the parameters indicating the status of local forcing (located above the force table) are set to regular values as if the information was actually available. In particular, these parameters are *Force State*, *Forced Variables*, *Remaining Force Duration* and *Force Time Reaction*. [HE23021]

12 Licenses are sorted by names which may result in a changed CRC

During code generation, SILworX V6.18 and higher no longer stores the licenses sorted by entry order, but by names. This may result in a changed CRC when converting projects from previous versions.

Workaround: Use suitable names, ask for HIMA technical support.

13 SILworX terminates when starting the online test or the offline simulation

The following procedure causes SILworX to terminate when the online test or offline simulation is started:

- A variable is assigned to an online test field.
- The name of the variable is changed to a fixed value.

Two workarounds are possible:

- Assign a data type to the fixed value, e.g., change `2#111` to `BYTE#2#111`.
- Delete the online test field and connect a new one at the output. [HE26212]

4.2.2 Arrays and Structures

1 Various elements of a structure variable cannot be written simultaneously from different sources

The user program and the hardware or communication cannot simultaneously write to two different elements of the same structure variable.

Workaround: Use different structure variables for the elements written to by the user program and for the elements written to by the hardware or communication. [HE15700]

2 Elements of struct variables used as index

Elements of variables with struct data type cannot be used as array index. [HE16159]

3 Invalid array index addresses a random array element

If the array index value is outside the defined range, accessing the array with this index returns the value of a random array element. [HE25075]

4.2.3 PC Environment

1 Use of hardlocks

Licensing SILworX using hardlocks (U3 USB sticks, standard USB sticks) is handled differently among the various operating systems:

- With Windows XP, administrator rights are required in the following cases:
  a For installation.
  b For operation, if SILworX was licensed using U3 USB sticks.
  The rights of a standard user are sufficient for operation, if SILworX was licensed using standard USB sticks.
- With Windows 7, administrator rights are required to perform the installation.
  For operation, hardlocks can be used to license SILworX to all types of users.

Workaround for Windows XP: Use softlock licenses or standard USB sticks. [HE17056, Restriction]

2 Windows synchronization deletes the project file from the network drive

The following sequence could cause a project file to be unintentionally deleted:

- The project file is located in a directory on a network drive.
- The Windows synchronization is running on the client PC.
- The project file is being edited with SILworX on the client PC.
- A synchronization process is started.
- The user stops editing the project file and exits SILworX.

Cause: When a project is being edited, SILworX saves the project to a temporary file. When the project is closed, SILworX deletes the previous project file and renames the temporary file. In the process, the Windows synchronization on the server may delete the previous project file, but not rename the temporary file.

Workaround: Only perform synchronization after closing the project in SILworX. [HE25231]

4.2.4 Function Blocks and Functions

1 DIV_TIME with REAL typecast reports an error on ENO for divisor := +/-INF

The DIV_TIME function from the standard library improperly sets the ENO error output ENO to FALSE and reports therefore an error under the following conditions:

- The IN2 input (divisor) is of type REAL.
- The value of IN2 is +/-INF. [HE15199, restriction]

2 ENO output in connection with user-defined function blocks may be overwritten during reload

With user-defined function blocks, in which the ENO output only depends on the EN input, ENO may be set to FALSE during a reload. Such function blocks do not themselves write to ENO. [HE19129]

3 The number of instances of function blocks restricts the program's reloadability

If the user program has a very nested structure, the maximum number of operations necessary to perform a reload may be exceeded.

Only resources with 21845 or less instances can be reloaded. Depending on its structure, a user program may not be capable of reload in connection with a significant lower number. [HE23791]

4 Value change for VAR_INPUT variables for user-defined function blocks

For user-defined function blocks, SILworX handles VAR_INPUT variables differently, depending on how the inputs are connected:

- If the inputs are wired with variables of a default data type, the value of the variable is transferred to a copy within the function block (call by value).
- If the inputs are connected to variables of a user-defined data type, a reference to the variable is transferred to the function block (call by reference).

Notice: If the VAR_INPUT variable is a global variable, take into account that it may additionally be used as VAR_EXTERNAL in the called function block and may be modified. During the subsequent reading of the corresponding VAR_INPUT variable in the function block, value changes of VAR_EXTERNAL result in the following actions:

- For a user-defined data type, the new values are read.
- For an elementary data type, the previous values are read. [HE17740, Restriction]

5 The MUL function block provides erroneous values in concomitance with the following circumstances:

- HIMatrix standard resource
- Data type LREAL

One input has the value +/-∞, the other input the value *nan* (not a number)

- In this case the result is -∞, and not *nan* as specified. [HE21924, Restriction]

6 SILworX terminates after copying and pasting a faulty function block

The following procedure causes SILworX to terminate when a function block or function is copied and inserted:

a Create a variable of type VAR_INPUT or VAR_OUTPUT in the function block or function and assign a user-defined data type to the variable.

b Insert the variable in the function block or function.

c Modify the user-defined data-type, e.g., add a dimension to an array.

d Do **not** update the affected VAR_INPUT or VAR_OUTPUT in the function block or function.

e Copy the function block or function in the structure tree to a position from which the modified data type can be reached.

Workaround: Update VAR_INPUT or VAR_OUTPUT in step **d**! [HE25573]

5 Upgrading from a Previous Version to V7.18

Project data from previous versions can still be used in V7.18.

No CRC changes occur as long as the **minimum configuration version** setting remains unchanged for a resource and none of the cases described in Chapter 1.2 has occurred. SILworX maintains the CRCs compatible provided that no changes occur or no new features are used.

Observe the following procedure to upgrade from V2.36 and higher to V7.18:

- Generate code for all resources prior to conversion. This allows potential deviations after the conversion to be detected during generation.
- Prior to converting the project, save it, e.g., on a removable medium.
- Open the project in V7.18 and convert it.
- Since the conversion is extensive, check the project integrity after completing the conversion.
- Generate the code in V7.18 to detect potential errors and check if CRCs have changed.
- Remove detected errors and re-generate the code to detect CRC changes.
- If no CRC changes are detected, the migration was completed successfully.
- If CRC changes are detected, verify if they can be accepted.
- If the changes can be accepted, the migration is successfully completed.
- If they cannot be accepted, continue to work with corresponding previous version.

Conversion Notes:

- The procedure to convert versions up to V2.36 is described in the release notes to V2.36.
- For very large projects, the conversion can take several hours.

6 References

- SILworX first steps manual V6, HI 801 103 E
- Communication manual V6, HI 801 101 E