

## Changes in CoDeSys SP RTE

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## **1 Changes from V2.3.1.2, April 2003 to V2.3.1.2, 6.8.2003**

### Bug fixes:

- The memory leak occurring while the diagnostic window is opened was eliminated.
- Communication: The runtime crashes sporadically occurring when downloading a program through a second gateway while an application was simultaneously monitoring through another gateway (for example an OPCServer) have been eliminated.
- The persistent info file is now deleted on every startup. This leads to an error-free behavior of VAR RETAIN PERSISTENT which means that these persistent variables are initialized with values from the retain.bin file or they are reset to their initial values. In some cases these variables remained uninitialized.
- The state of asynchronous DLL-calls is now correctly monitored even if a call could not be started or registered due to missing buffer space.

### Features:

- There are two new PLCBrowser commands: "saveretains" and "restoreretains", see PLCBrowser's help command ("?" command).
- With an extended SysLibTime.lib it is now possible to convert 64-bit timestamps to a TimeDate-structure. It is, thus, now possible to work with absolute time stamps which are more accurate than windows time stamps.
- Maximum string length for string functions from Standard.lib is now 512.

## **2 Changes from V2.3.1.2, August 2003 to V2.3.2.0, 30.9.2003**

### Bugfixes:

- Communication from a Tcplp-Client and the shared memory driver at the same time could lead to a system-crash, if the Tcplp-Client was working without login or had a timeout.
- For WindowsXP: Floating-point-save interrupts generated by IOcards are now possible under XP, too.
- Bootproject is no longer deleted, if the user configured "Never load bootproject". The retainfile is deleted, if last shutdown was not registered as o.k. The bootproject is deleted, if the load is configured, but failed. In these cases, an entry to the system's diagnostic-window is generated.
- The retainfile is deleted everytime the PLC detects, that the last shutdown was not o.k. (Means power off without UPS or system crash.)

### Features:

- The buffer for asynchronous DLL-Calls increased from 32k to now 128k, to make more simultaneous jobs possible.

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### **3 Changes from V2.3.2.0, 30.9.2003 to V2.3.2.1, 28.10.2003**

#### Bugfixes:

- The icon was not inserted to the taskbar in cases, the Windows-desktop-configuration was modified.

#### Feauters:

- The buffersize for asynchronous DLL-calls is now configurable.

#### **4 Changes from V2.3.2.1, 28.10.2003 to V2.3.2.2, 5.11.2003**

Features:

(none)

Bugfix:

- In case CoDeSys logged out with communication-error, because of removing the networkcable, for example, there was sometimes no way to log in again. Now the login is always possible after a timeout of 30s.

## **5 Changes from V2.3.2.2, 5.11.2003 to V2.3.2.3, 18.11.2003**

### Bugfixes:

- SysSockSwap had a bug swapping values > 32768 in words (size 2). This was visible to the user when using SysSockHtons.
- Renaming files now works with empty files without returning an error.
- tsk command in PLC-browser: Taskintervalls are displayed as microseconds, which is the right unit here.
- If a fileoperation fails when downloading the bootproject, CoDeSys will show an errorbox now "Creating the bootproject fails."
- Networking from IEC-tasks: It is no longer possible to create more than 20 simultanous sockets without closing one, because it is an application-bug to do so. (The application was able to create sockets endlessly and so crash the system.)
- The webserver is not longer able to block the system and so prevent it from normal shutdown.

### Features:

- It is now a configuration-setting to update inputs / outputs while the debugtask is halted an breakpoints.

### In IODrv for Hilschercards:

- New extended interface for DPV1-services.

### In IODrv for FC3101/FC3102 (Beckhoff-PB-card):

- Slave functionality now available.

## **6 Changes from V2.3.2.3, 18.11.2003 to V2.3.2.4, 27.11.2003**

### Features:

- It is now configurable, whether in- and/or outputs are updated while the runtime is halted on a breakpoint.

### Bugfix:

- The setup now reinstalls the service, means the service is first uninstalled and then installed again.
- The shutdown under Windows XP now lasts as long as under Windows 2000/NT4.0



## **7 Changes from V2.3.2.4, 27.11.2003 to V2.3.2.5, 22.12.2003**

### Feature:

- On a registry entry "DebugOut" in the RTService' key some checkpoints when starting the service are dumped to the eventlogger.
- The exceptionhandler for pagefaults is now left earlier, if the pagefault is not caused by the PLC.

### Bugfix:

- string\_to\_real/real\_to\_string-conversions may have led to a wrong result in some (seldom) cases.

## **8 Changes from V2.3.2.5, 22.12.2003 to V2.3.2.6, 2.2.2004**

### Bugfixes:

- The returnvalue for asynchronous DLL-Calls using DllCall.lib now fits the reality, even if a call was able to be started in case of missing bufferspace.
- In case of an online-change together with external libraryfunctions, it was possible that instead of the library function a dummy doing nothing was called for 1 IEC-cycle. This is now corrected.
- No monitoring service is executed before a program is loaded now. This was (maybe) a cause for runtime-crashes together with OPC-Clients asking for data before any project was loaded.
- Watchdog: In case the watchdogtime for a task was bigger than the cycletime and the task violates the watchdog in every cycle, the watchdogexception was created after a few cycles, when the overruncounts accumulated to the desired watchdogtime. This is corrected now: The supervisioncounter is reseted now each time the task terminates its IEC-cycle.

### Features:

- The RTService now gives himself the privilege for system-shutdown. So asynchronous DLLs are able to cause a systemshutdown.

## **9 Changes from V2.3.2.6, 2.2.2004 to V2.3.3.0, 8.3.2004**

### Features:

- 2 new IO drivers are invented with this setup:  
The RTIOdrvSJA resp. RTIOwdmPCAN (for Win2000 and XP), to support the PCAN-PCI-card from Peak-Systems, Germany.  
The RTIOdrvAutomata resp. RTIOwdmAutomata (for Win2000 and XP), to support the SERCOS-card from Automata, Germany.

### Bugfix:

- A bug when opening multiply the same file was fixed: The SysFileOpen-function from SysLibFile did not return in some cases.

## **10 Changes from V2.3.3.0, 8.3.2004 to V2.3.3.1, 23.3.2004**

### Bugfixes:

- Eventtasks are now scheduled only if the status of the PLC is RUN.
- Eventtasks are scheduled as long as the eventflag is TRUE. If the eventtask does not reset the eventflag, the task will be rescheduled immediately after it has finished. There is no more detection for the rising edge of the eventflag, because this may lead to never reschedule the task, if the event is set by an interruptcallback and the scheduler did not notice the FALSE-state.
- After resetting the PLC hard, monitoring now keeps working (??? are displayed, and the values are updated correctly after the next download).

## **11 Changes from V2.3.3.1, 23.3.2004 to V2.3.3.2, 29.6.2004**

### Bugfixes:

- In case the IEC-application only defined eventtasks, means no cyclic task is defined, the scheduler will no longer wait for the tasks to terminate themselves. The tasks are immediately terminated now in case of reset and download and so on.
- On some hardware-platforms, connecting hardwareinterrupts to IODrv-functions did not work correctly. This is o.k. now.
- SysFileOpen now works correctly, even if there are more than one files opened and closed. This situation may have led to confusion with filehandles.
- On the APIC-platform the scaling of the FSB-clock appeared to be inexact in some cases. The clock frequencies are now measured and then rounded to the "well known" frequencies like 100, 133, 200, 233 and so on. (The FSB-clock is used to generate the scheduler's interrupt on these platforms.)

### Features:

- The filename passed to fileopen now does no longer have to be a fully qualified filepath. Relative paths are treated as relative to the PLC's filepath.
- New SysLib-function now available to find out addresses of I/O/Memory without using a reference, which may lead to compileerrors if the reference is not defined in the PLC-configuration.

## **12 Changes from V2.3.3.2, 29.6.2004 to V2.3.3.3, 5.10.2004**

### Features:

- The CoDeSys DeviceNet-configurator now works together with the RTIOdrvHilscherDPM

### Bugfixes:

- The following IO-Drivers contain some (little) bugfixes:
  - RTIOdrvAutomata for Sercos card.
  - RTIOwdmAutomata for Sercos card.
  - RTIOwdmPCAN for CanOpenLib.
- The RTIOdrvFC310x now contains a new Lib-function to enable and disable slaves on more than 1 controller.
- The 3SXMLparser DLL is now up to date.
- The 3S licensemanager is now up to date.

### **13 Changes from V2.3.3.3, 5.10.2004 to V2.3.3.4, 29.10.2004**

#### Bugfixes:

- A reason for the sporadic occurrence of the runtimeerror "Accessviolation" when starting the runtime was detected and removed. This also was the reason for (seldom) system crashes on startup.
- After a reset when stopped on a breakpoint, the runtime switched to run on logout. This is unexpected behaviour and is now corrected.
- HMS-Profibusmaster (RTIOdrvHMS): The flag DPV1\_Slave is now always set to 0, so slaves for which this flag is specified in the gsd-file will be able to run with these cards.
- When changing the monitoring windows in CoDeSys, it was possible that the runtime stopped on a breakpoint, but none was defined. This is corrected now.
- A systemcrash may have occurred on shutting down the RTE when the diagnostic page is opened.
- Information: The RTIOdrvFC310x now should work again together with the original latest firmware of Beckhoff. The firmwareversions > 2.53 should work without any problem.
- RTIOdrvHilscher: The new Hilschercards, using the EC1 and the PLX9030 (PCI-ids changed) are now recognized by the driver.

#### Features:

- SysLibFileAsync is now supported.
- The callback EVENT\_BEFORE\_DOWNLOAD is now supported by the RTE.
- The IODrivers now can ask the kernel for segment size and address.
- The RTE-kernel now knows the device-cap-flag "devicenet master" and is able to pass the configurationdata for a devicenetmaster to a driver.
- RTIOdrvHilscher: The data for configuring a devicenet master, produced by the CoDeSys-DevNet-configurator, can be used by the driver to configure a DeviceNet master.
- The RTIOdrvAPIC now measures over a long time only once the frequency of the interruptcounter and then will start very fast the following times, because the measured values are stored to registry.

## **14 Changes from V2.3.3.4, 29.10.2004 to V2.3.3.5, 4.11.2004**

### Features:

- SysLibDir is now supported.

### Bugfixes:

- The RTIOdrvHilscherDPM now recognizes the CIF30DPMV1.
- The RTService now stops the PLC's cycle before the system is stopped, to let all IEC-code terminate before any memory is freed, the IEC-tasks may need in library functions.



## **15 Changes from V2.3.3.5, 4.11.2004 to V2.3.3.6, 9.11.2004**

Features:

- SysLibNetConnect is now supported.
- Fileaccess via network is now supported.

## **16 Changes from V2.3.3.6, 9.11.2004 to V2.3.3.7, 24.11.2004**

### Features:

- TcpIp-functions from SysLibSockets are supported now.
- Read/Write of kernel buffers via the RTE-kernel is now shown in AsynchDLL-toolkit.

### Bugfixes:

- Handling of serial interface appeared to have a bug under Win2K in case of transmission of large data.
- When performing onlinechange, there might have been situations where the second or higher onlinechange crashed the runtime (very seldom and immediately shown by a system-crash).

## **17 Changes from V2.3.3.7, 24.11.2004 to V2.3.3.8, 8.12.2004**

### Bugfixes:

- SysFileDelete did always return FALSE, even if file was deleted correctly.
- Stringbuffers (for all stringfunctions from Standard.lib and conversions) are now used exclusively for each task. So the stringfunctions now work tasksafe.
- The APIC-driver may not deliver accurate interrupttiming in cases when heavy CPUload within multiple tasks was generated.
- SysSockGetOption now works correctly.
- CanOpenNodes are no longer checked for correct DeviceType by the Hilschercard. This prevents the user from editing EDS-files manually, in cases no correct defaultvalue for the object 0x1000 is given there.

### Features:

- COS-card of Hilscher is now supported.

## **18 Changes from V2.3.3.8, 08.11.2004 to V2.3.3.9, 16.12.2004**

### Bugfixes:

- A possible jittersource for long running tasks together with the APIC-driver is removed now.

### Features:

- The automatic writing in background to memory-addresses of bus diagnostic data can be disabled now.

## **19 Changes from V2.3.3.9, 16.12.2004 to V2.3.3.10, 16.3.2005**

### Bugfixes:

- Unknown IOCTL-codes for the SysLibSockets are now passed to the userspace to be processed by the OS.
- SysComWrite could cause an accessviolation in RTService. When confirming the resulting messagebox, the system crashed.

### Feature:

- IODriverinterface extended, there's now the possibility to generate events from an IODriver. (IEC-callbacks)
- An event is generated by the CAN-drivers to synchronize the eventtask.
- With a registry entry (FlushBuffers) in the PLC's key, every call of SysFileWrite leads to flushing the file on disk immediately. This is for making sure, the content is not buffered, in case of for example short times when shutting down with an UPS.

## **20 Changes from V2.3.3.10, 16.03.2005 to V2.3.3.11, 26.04.2005**

### Bugfixes:

- In 2.3.3.10 the jitter when using networkvariables was increased because all calls to SysSockIOCtrl were passed to userspace, to look for all sockets. This is now as in the versions before: Only kernel sockets are checked with FIONBIO\_READ-command, only other commands are passed to the userspace handler.
- When performing a reset hard, the events that were connected via taskconfiguration are still present and lead to a system crash, because the program is not present again.
- When using flow control in STOP or SINGLECYCLE mode, wrong values are monitored.

## **21 Changes from V2.3.3.11, 26.04.2005 to V2.3.4.0, 05.08.2005**

### Bugfixes:

- The shutdown event is now generated when the system is stopped or Windows is terminated.
- The events before reading inputs and after writing outputs are now generated.
- All local functions for SysLibSockets and SysLibCom are now executed in an own thread, to prevent the stop of the execution of other asynchronous jobs, if one of these functions returns not immediately. For example, if the application calls SysSockConnect and this function does not return, because the communication partner is not available, the application was blocked in another task that calls SysComOpen, too.
- The socketfunction SysSockReceive will no longer overwrite buffer, if the socketfunction returns with an error.
- The system will no longer try to write to an opened COMport, if the port is currently being closed by the application.
- It is now possible for the application to use asynchronous jobs and wait for the execution in the shutdown callback.
- If an event is registered for the application and the event is a hardwareinterrupt of an interrupt that is not handled by any driver, the interrupt was connected on the interruptcontroller it belongs to. Now, if the interrupt is higher than 8, the second interrupt on the first controller is additionally connected.

### Features:

- A new card was added to the list of IODrivers: The Softing's PROFIboard PCI, a profibus master card, now can be used together with CoDeSys SP RTE.
- The RTIOdrvHilscherDPM now is able to use interrupts together with all PCI profibus mastercards by Hilscher. This is usefull together with the new library HilscherPBInfo.lib, to determine the actual PB-scantime.

## **22 Changes from V2.3.4.0, 05.08.2005 to V2.3.4.1, 19.09.2005**

Feature:

The RTE now runs in its hardlock version with the CoDeSysHMI-dongle and the the original RTEdongle. This is for customers that run HMI on the RTE-PLC to need only one dongle.



## **23 Changes from V2.3.4.1, 19.09.2005 to V2.3.4.2, 13.10.2005**

### Features:

- SysLibSocketsAsync is now supported.
- SysLibPCI is now supported
- SysLibFileAsync is now supported.
- The Hilscherdriver now supports waiting for the last PB-cycle or skipping the current updatecycle in case the last PB-cycle is not finished.

### Bugfixes:

- The DLLnames can now be 500 cahracters long, not only 80.

## **24 Changes from V2.3.4.2, 13.10.2005 to V2.3.4.3, 8.11.2005**

### Bugfixes:

- SysSockIOCtl now works for TcpIp also correctly, so ModBusLib can work on the RTE with TcpIp, not only ModBus.
- The use of SysLibIECTask does now no longer lead to unresolved references when downloading an application.
- The extensive use of asynchronous calls no longer blocks the system on shutdown or use of reset-buttons and cycle-stops.

### Features:

- The Hilscherdriver now uses the highest priority task as PB-update task if no UpdateTask parameter is defined.

## **25 Changes from V2.3.4.3, 8.11.2005 to V2.3.5.0, 3.Feb.2006**

### Bugfixes:

- On excessive use of asynchronous functions like filefunctions or socketfunctions, the runtime did not shut down correctly in some cases.
- SysLibMem is now supported by the RTE.
- SysLibSockets is now using the same interface as all 3S runtimes.
- SysLibPci is now supported by the RTE in the way like all 3S runtimes do.
- All IODrivers now are using a save way to share PCI interrupts. Sporadic problems with some PCs were the symptom for this bug.

## **26 Changes from V2.3.5.0, 3.Feb.2006 to V2.3.5.1, 21.Feb.2006**

Bugfixes:

SysLibSocketAsync.lib: The FB SysSockSelectAsync was wrong.

## **27 Changes from V2.3.5.1, 21.Feb.2006 to V2.3.6.0, 21. Sept. 2006**

### Bugfixes:

- SysLibSocket Async now seems to work correctly.
- The symbolfile is now deleted in any case when downloading a new project. This solves the sporadic problem of terminating the OPC-connection sometimes after a download.

### Features:

- The EVENT\_TIMER can now be used to generate a callback to an IEC function in every Schedulertick.

## **28 Changes from V2.3.6.0 to V2.3.7.0**

Bugfixes: RTIOdrvDAMP is now really able to handle multiple devices.

Features:

## **29 Changes from V2.3.7.0 to V2.3.7.1**

Bugfixes:

#6920 The info of the currently loaded project is now displayed.

#7615 The UDP sockets now can be used (together with an additional library) to send / receive messages with more than 512 bytes. (not in a realtime context.)

### **30 Changes from V2.3.7.1 to V2.3.7.2**

Bugfixes: #7645 RTE is now running on multicore PCs, where some IODrivers are not yet tested.



### **31 Changes from V2.3.7.2 to V2.3.7.3**

Only the version of the softmotion libraries is updated to 1.9.3.1.

### **32 Changes from V2.3.7.3 to V2.3.7.4**

The version of the softmotion libraries is updated.

### **33 Changes from 2.3.7.4 to V2.3.7.5**

Fixed defects:

#6988 New function in a new library is now available to save and restore the retain variables from the application.

#8441 Together with the CoDeSys V2.3.9.9 and higher the shared memory gateway driver will no longer crash the system on multicore CPUs.

#8497 Hilscher card driver: The message box number has no longer to be maintained by the application. The driver takes care of the number to make sure it is unique over all instances.

Softmotion libraries in the target are updated to the current version.

### **34 Changes from 2.3.7.5 to V2.3.7.6**

Fixed defects:

- 9015 Possibility of resource leak with asynchronous operations.
- 8808 File open does not work with hidden files.
- 32 COMports instead of 16 are now supported.

### **35 Changes from 2.3.7.6 to 2.3.7.7**

Fixed defects:

- 9181 It is now possible to work with retains in file, even if a FC310x is in the system, that has retain memory on board. To achieve this, a registry entry has to be created by the user.
- 9161 The function SysFileCopy now returns the number of copied bytes as described in documentation.

New:

The CAN-drivers RTIOwdmPCAN and RTIOwdmCANAutomata now are save to run on a multicore CPU.

### **36 Changes from 2.3.7.7 to 2.3.7.8**

Fixes:

9297 RTIOdrvAPIC sometimes crashes the system on first startup on a multicore CPU.

Fix for a sporadic problem with the RTIOdrvHilscherDPM, that was not really reproducible.

Fix for a sporadic problem concerning event triggered tasks (also not reproduceable in the office): Very seldom, an event triggered task was not executed even if the event was set.

### **37 Changes from 2.3.7.8 to 2.3.7.9**

#### Bugfixes:

- 9131 A new CANcard driver for the can card by Isel, Germany, is available. It is not yet included with the setup but can be requested from 3S or Isel.
- 9544 boot.sdb is now used together with the bootproject.
- 9601,9603 SysLibNetConnect now works as shipped with the setup.
- 9637 Reentrant semaphore handling implemented.

#### Improvements:

The RTIOwdmPCAN is now working in PeliCAN mode and able to run on M-Core CPUs without losing messages/sending too less messages.

#### Known Issues:

The other CAN card drivers, for the lxxat and the Automata CAN card still may have problems on M-Core CPUs.

### **38 Changes from 2.3.7.9 to 2.3.7.10**

Bugfixes:

9765 Fix M-Core Problems for RTIOwdmCANAutomata driver.

9797 Support all functions of SysLibGetAddress.

9119 Make use of different input- and output sizes possible with FC310x Profibus card in slave mode.

This change requires the use of the new cfg-file at the programming system and the use of the new FW with a version higher or equal 2.66 from Beckhoff.



### **39 Changes from 2.3.7.10 to 2.3.7.11**

#### Bugfixes:

9804 Installation of LicenseManager is now completed and should no longer cause problems in case CoDeSys is not installed on Target PC together with the RTE.

#### Improvements:

In the RTIOwdmCanAutomata the new PLX chip 9030 is now supported.