



CODESYS

Release Information

CODESYS

Profile: V3.5 SP7 Patch 4

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1 General

This document contains information on a product version which was released in compliance with our quality guidelines.

1.1 Responsible for the Release

Name	Role
Dieter Hess	Product Manager / CEO
Kevin Ketterle	Manager Product Development (Base Technology)
Hilmar Panzer	Manager Product Development (Application Technology)
Thomas Zauner	Manager Product Development (Systems)
Monika Gottwald	Quality Assurance

Responsibilities of the undersigned

- Product Management
(Confirmation that the content of the version to be released meets the requirements of the Product Management)
- Product Development
(Confirmation that the version to be released was developed in compliance with the relevant process description)
- Quality Assurance
(Confirmation that the version to be released was released in compliance with the relevant process description)

Kempton, 21 January 2016

_____ (Dieter Hess)

_____ (Hilmar Panzer)

_____ (Kevin Ketterle)

_____ (Thomas Zauner)

_____ (Monika Gottwald)

Note: If you are updating from a version older than this release, then please ensure that you read the release information documents for all releases since your version.

2 Compatibility Information

Feature Sets [CDS-38630](#)

After many end user complaints about the distinction between "Standard" and "Professional" user, we now decided to disable the "Feature Set" functionality entirely.

To achieve that, we removed the two plug-ins "Features" and "DefaultFeatureSettingsProfile" from the installation. The remaining system will handle this gracefully and will automatically fall back to the "Professional" mode without any restrictions.

SysDir [CDS-40332](#)

IEC library functions:

SysDirGetCurrent:

Get current working directory for IEC file access

SysDirSetCurrent:

Set current working directory on the target. In this directory all following file function are operated.

This setting applies to file access from IEC only. An empty string resets the working directory to its default.

CmpSettings [CDS-34118](#)

In CmpSettings the parameter bCached is now implemented for the following functions:

SettgGetIntValue

SettgGetStringValue

SettgGetWStringValue

The parameter bCached has the following options:

CMPSETTINGS_CACHED (0): Value is read from cache (default)

CMPSETTINGS_NOT_CACHED (1): Value is read from file and cache is updated for all values

In the former implementation, this parameter was ignored and the values were always read from cache. This behavior is now represented with CMPSETTINGS_CACHED (0).

2.1 Compatibility Information for End Users

OnlineChange: Compatibility problem [CDS-44018](#)

For projects that contain property getters and setters implemented in FBD, LD, or IL, and have their compiler version set to \geq V3.5.5.30 and $<$ V3.5.6.0 that was opened with CODESYS V3.5 SP6 or later, the properties were accidentally modified to drop the "property" and "hide" attributes.

This led to an unintended online change and might cause additional problems due to the missing "property" attribute.

This behavior has been corrected with CODESYS V3.5 SP6 Patch 5.

As properties with the mentioned unintended modification have to be considered invalid due to the missing "property" attribute. The fix has been implemented without further checks of the compiler version.

Therefore, projects corrupted by the unintended change might cause an additional online change when opening the project in V3.5 SP6 Patch 5 or later.

Projects that did not cause an unintended online change in versions V3.5 SP6 and its patches are not affected by this online change.

EtherCAT Safety [CDS-39016](#)

The connection ID that is defined on the "Safe configuration" page of the safe logical I/O must be used as the value for byConnectionId input of the function block FB_CS

CmpRouter: Stabilize the dynamic router configuration [CDS-38134](#)

Now by default, the CmpBlkDrvUdp registers its instances in the operating system's specific network adapter sorting order. Therefore, it is possible to change the sorting order of the CmpBlkDrvUdp instances by changing the network adapter sorting order (priority) in the operating system settings.

In previous versions of the CODESYS Gateway and the CODESYS Control Win, the CmpBlkDrvUdp instances were sorted by IP address. This behavior can be achieved again (for all platforms) by using this new setting:

```
[CmpBlkDrvUdp]
SortAdaptersAtStartup=1
```

Description of the setting:

Sorts at startup the network adapters to register them in a defined sequence. This setting can be used to obtain more stable addresses over several reboots when the platform does not have a specific sorting order for network adapters. Typically this may be used on Microsoft Windows systems to be independent from the order of the network adapters, which is reported to change sometimes on Windows updates.

Possible values:

0: No sort. Keep the system order of the network adapters.

1: Sort adapters by IP address.

Windows 8 and higher: RTE: Prevent start:[CDS-41651](#)

RTE refuses to start with enabled "RunFullMemoryDiagnostic" task in the Windows task scheduler.

If this task is enabled during runtime, then RTE is terminated and a message is printed to the Windows Event Logger.

CmpBlkDrvUdp [CDS-16800](#)

The Gateway.cfg contains now the new setting

```
[CmpBlkDrvUdp]
DefaultPortIndex=3
```

To keep the address stable also over a cable unplugging and replugging sequence. Because of this setting the CODESYS address of the gateway (and the other runtime systems on the same system) may change during the update of the gateway or the next restart. This single address change should not be relevant for nearly almost cases because clients should reference PLCs by their name and not by their CODESYS address. It is not recommended to remove this setting and deactivate the improvement.

Description of the setting

If no port index (see above) is set for a network interface, then the CmpBlkDrvUdp tries to find a free port in the range 1740..1743 and uses the first free one. The search for a free port starts at 1740 plus the value of this setting and wraps around so that in all cases all four ports will be checked until a free one is found. Usually the setting is used for devices which run several instances of the CODESYS runtime system (also Gateway, PLCHandler, OPC Server) to always get the same port offset for each instance independent of the starting sequence. This setting is evaluated globally for all adapters, thus there is no need to know the network adapter configuration of the device.

The allowed range of the setting is 0..3. Only for BlkDrvUdp.

Compiler: END_If [CDS-43146](#)

Compilerversion >= 3.5.7.0

Previously compilable code with incorrect redundant END_IFs inside of CASE statements will not compile anymore from this compiler version onwards.

M4 Export: exporting function blocks [CDS-38402](#)

VAR_STAT variables are ignored when exporting IEC FBs to C.

No error is reported since part of the FB can be implemented in IEC (for example, methods) and those can make use of the static variables.

GSDML Import [CDS-37084](#)

Due to the changes the created device description from the GSDML xml file has changed. If an existing device in the devices repository is reimported, then the old device description is overwritten. If an old project is opened and the device is updated, then some modules are internally removed and added again but the settings and especially the I/O mappings are lost.

Therefore, after using update device compile errors could be possible.

The missing settings or I/O mapping could be manually added or with the project compare.

IoDrvCIFXEthernetIP [CDS-43415](#)

Compatibility: Output of RemoteAdapter changed from "uiExtendedState" to "UiExtendedState".

LMM: Incorrect precompile messages [CDS-41530](#)

With compiler version $\geq 3.5.7.0$, the warning is not displayed anymore for constant GVLs marked for external implementation.

The warning is kept for non-constant GVLs. Furthermore, the M4 export ignores non-constant GVL variables now, meaning no #define is generated for its variables.

Visualization, Barelement [CDS-42671](#)

Visualization, Barelement: because of a bugfix, small elements can look different after updating the visualization profile.

Constant variables [CDS-41563](#)

Compiler version $\geq 3.5.7.0$

The size of string variables using constants in the length part might change after increasing the compiler version. Only projects disabling the "Replace Constants" compiler option are affected.

So far, this declaration `STRING(c1*c2)` resulted in an 81-byte string, regardless of the values of constants `c1` and `c2`. Now the actual calculated value will be used.

LMM: Execute implicit CheckPointer calls for references [CDS-46034](#)

Compiler version $\geq 3.5.7.40$

The CheckPointer function is now also applied to all usages of references (REFERENCE TO variable declaration). Until now it was only applied to the usage of pointers (POINTER TO variable declaration)

2.2 Compatibility Information for OEMs

SysSockGetFirstAdapterInfo/SysSockGetNextAdapterInfo(): Publish the valid flag [CDS-43148](#)

Only relevant for OEMs with own implementations/platform parts for the SysSocketGetAdapterInfo functionality introduced by version V3.5.6.0:

The valid flag of the adapterinfo structure was moved from the private internal structure `SOCK_ADAPTER_INFO_INT` (ui32InternalFlags, flag `SOCK_IFLAG_VALID`) to the public structure `SOCK_ADAPTER_INFO` (ui32Flags, flag `SOCK_AIF_INFO_VALID`). Existing implementation have to be adapted. Please see SysSocketIf.h for details.

SysDir [CDS-40332](#)

C functions:

SysDirGetCurrent: Get current working directory. If no FilePath is specified pzDir is empty (default).

To obtain the working directory of the underlying file system use `SysDirGetCurrent_`.

SysDirGetCurrent_: Get current working directory of the underlying file system. No standard path will be added.

IMPLEMENTATION NOTE:

This interface function is implemented operating system dependant.

SysDirSetCurrent: Former set current working directory.

This function has been deprecated. It returns just `ERR_NOTIMPLEMENTED`.

To really change the working directory of the whole runtime system use `SysDirSetCurrent_`.

SysDirSetCurrent_: Set current working directory of the underlying file system of the whole runtime system.

No standard path will be added. It is not recommended to use this function.

ATTENTION: It is strongly recommended to save the path with `SysDirGetCurrent_` prior to this call and restore the path as soon as possible. Otherwise the whole runtime system may not work any more.

ATTENTION: Reset Origin does not affect this setting. The runtime system has to be restarted.

IMPLEMENTATION NOTE:

This interface function is implemented operating system dependant.

Setup [CDS-41392](#)

The setup installs now only the newest version of each GAC.

Every customer has to take care that all GACs referenced by OEM plugins are part of the OEM packages or of the OEM installation.

CANL2: Wrong ordered Tx messages [CDS-31684](#)

Incompatible change in CL2 API. All existing CAN Mini drivers will stop working with new runtime version and must be adapted!

Following incompatible changes were made:
CL2_MsgSendAckn was removed from CL2 API.

Following functions were added to CL2 API:

- CL2_MsgSendAcknIRQ

After a message has been sent successfully, the block transmitted to the CAN Mini Driver has to be returned to the CL2 layer. This is done using the function CL2_MsgSendAcknIRQ or CL2_MsgSendAcknNoIRQ. CL2_MsgSendAcknIRQ is designed to be used in interrupt context (e.g. Tx IRQ). The implementation is optimized for optimal chip utilization. If there are still messages in Tx Queue, CMD_Send is triggered as long as the driver signals an error (for example, chip not ready) or Tx queue is empty. Afterwards hBlock is processed if unequal CAA_hINVALID. After calling the function, hBlock should not be used anymore by driver.

- CL2_MsgSendAcknNoIRQ:

After a message has been sent successfully, the block transmitted to the CAN Mini Driver has to be returned to the CL2 layer. This is done using the function CL2_MsgSendAcknIRQ or CL2_MsgSendAcknNoIRQ. CL2_MsgSendAcknNoIRQ is designed to be used outside interrupt context (e.g. CMD_Send). Function behavior depends on hBlock:

If hBlock is unequal CAA_hINVALID: hBlock is processed by CL2. After calling the function hBlock should not be used anymore. No further CMD_Send is triggered (difference to CL2_MsgSendAcknNoIRQ).

If hBlock is CAA_hINVALID: The function checks for messages in Tx Queue and tries sending them by calling CMD_Send. A call with CAA_hINVALID is only needed afterwards CMD_Send returning an error.

Required adaptations to existing drivers:

- Drivers calling MsgSendAckn in Tx IRQ: Replace all CL2_MsgSendAckn with CL2_MsgSendAcknIRQ. The function was only renamed.

- Drivers calling MsgSendAckn outside TxIRQ e.g. CMD_Send: Use CL2_MsgSendAcknNoIRQ. Note that behavior of function is a bit different. If CMD_Send never returns an error and CL2_MsgSendAcknNoIRQ is called for each hBlock, then no call with CAA_hINVALID is necessary anymore. CL2 ensures that sending will not stop until Tx queue is empty.

If CMD_Send returns an error, sending will stop and CL2_MsgSendAcknNoIRQ with CAA_hINVALID must be called once. This call triggers a new send command.

Following source code could be used:

```
static CAA_BOOL CMD_Send(CL2I_BYTE byNet, CAA_HANDLE hBlock, CL2I_BYTE byPrio,
CAA_ERROR* peError)
{
    If (sending error)
    {
        pDriverContext->bTxError = CAA_TRUE;
        return CMD_SND_NOT_OK;
    }
    else
    {
        pInfo->ctMessagesSend++;
        CAL_CL2_MsgSendAcknNoIRQ(byNet, hBlock);
        return CMD_SND_OK;
    }
}
```

In a cyclic hook or in an event signaling that message sending may work again, execute following source code:

```
if (pDriverContext ->bTxError)
{
    /* in case of a tx error, we try to empty Tx Queue here */
    pDriverContext ->bTxError = CAA_FALSE;
    CAL_CL2_MsgSendAcknNoIRQ(byNet, CAA_hINVALID);
}
```

3 Information About the Latest Online Help

The entire chapter "CODESYS Development System" (codesys.chm) in the table of contents of the online help has been completely revised for V3.5 SP7. Changes have been made in the structure and writing style. The HTM files of the help pages got new names.

Other help modules, such as for visualization, SoftMotion, and device editors, which are still written in the previous style, will also be revised by the next service pack releases.

We apologize for any resulting inconsistencies that you may find in the online help as a whole. Thank you for your understanding.

4 Known Restrictions

Component	Description	JIRA ID
OPC UA / VxWorks (PPC)	The VxWorks PPC platform does not pass the compliance test and is not released yet.	CDS-43534
SH4 Codegenerator	Single precision mode is not supportet yet	CDS-44605 , CDS-44606 , CDS-44607
GVL: Setting external implementation property	With compiler version >= 3.5.7.0 the warning is not displayed anymore for constant GVLs marked for external implementation. The warning is kept for non-constant GVLs. Furthermore the M4 export ignores non-constant GVL variables now, meaning no #define is generated for its variables.	CDS-41530
EthernetIP IEC Stack with Linux	Connection type Multicast does not work	CDS-44504
SoftMotion - CAN Nanotec	Current firmware (Rev. 8658, 11.12.2014) of Nanotec device not supported – downgrade drive to older firmware (10.10.2009)	
C-Module Integration	Programming System: An example implementation using Visual Studio for the Control Win is included in the standard setup To use the provided example, an installation for Visual Studio 2010 SP1 is required. The standard setup does not provide a trial license for the Win Control. Applications with C Modules cannot be tested online.	CDS-19680
License Activation via Chrome webbrowser	Failing license activation with Chrome web browser since version 38	

5 Features and Changes / Addressed Defects

The link below opens an Excel sheet which contains information on the new implementations and changes in the current version:

Key, Summary, Description, Resolution, Priority, Issue Type, Components, Target User Group, Fix Version, Release Note

Special release information for OEM partners can be found in the RID note with the filter 'Target User Group' for 'OEM' or 'OEM and End User'.

Detailed feature and change list:

[Features and Changes_Addressed Defects CODESYS V3.5 SP7 Patch 4.xls](#)

6 Release Information

This section describes the tests that were conducted during the release of the above mentioned version and the corresponding results.

Test	Environment	Result
CNC (Autotest)		Passed / Released
Compatibility		Passed / Released
Compatibility - Internal (Autotest)		Passed / Released
Compatibility (Autotest)		Passed / Released
Compatibility Libraries (Autotest)		Passed / Released
Compatibility RTS		Passed / Released
Compile (Autotest)	x86	Passed / Released
Compile (Autotest)	ARM	Passed / Released
Compile (Autotest)	ARM Cortex	Passed / Released
Compile (Autotest)	MIPS	Passed / Released
Compile (Autotest)	PPC FPU	Passed / Released
Compile (Autotest)	x86, Win7/64 Bit	Passed / Released
Compile (Autotest)	x86-64, Win7/64 Bit	Passed / Released
Compile General (Autotest)	Win7/64 Bit	Passed / Released
Cross Reference		Passed / Released
EtherCAT	Control RTE	Passed / Released
EtherCAT (Autotest)	Control RTE, Ethernet Chip Intel Pro 1000 Control RTE auf WindowsEmbedded	Passed / Released
EtherCAT (Autotest)	Control RTE, Ethernet Chip Intel Pro 1000 Control RTE 64 AMP, Win8/64 Bit	Passed / Released
Example Applications (Autotest)		Passed / Released
IEC Variable Access (Autotest)		Passed / Released
IO Configuration		Passed / Released
IO Configuration (Autotest)		Passed / Released
Licensing Gate (Autotest)		Passed / Released
Online Change (Autotest)	WinControl V3	Passed / Released
Online Change (Autotest)	WinControl V3 64bit	Passed / Released
Online Help - Patch		Passed / Released
Package Manager		Passed / Released

Performance - Internal (Autotest)		Passed / Released
Performance (Autotest)		Passed / Released
Persistence Editor		Passed / Released
Persistence Editor (Autotest)		Passed / Released
Profibus - Online	NetX	Passed / Released
Profibus - Online (Autotest)	Control RTE, 7/32 Bit NetX Master (without DMA)	Passed / Released
Profinet (Autotest)	Control RTE 32bit NetX - Slave	Passed / Released
Quality Gate		Passed / Released
Refactoring(Autotest)		Passed / Released
Runtime - Full (Autotest)	Win7, ControlWin	Passed / Released
Runtime - Full (Autotest)	Control RTE APIC, Win7/32 Bit	Passed / Released
Runtime - Full (Autotest)	Control Win, Win8/64 Bit	Passed / Released
Symbol Configuration		Passed / Released
Visualization - Online	Integrated Visu Runtime: ControlWin, Win7	Passed / Released
Visualization - Online - Quality Gate	Target Web Visu Web Server: Control Win Browser: Chrome, Win7	Passed / Released
Visualization - Online (Autotest)	Integrated Visu Runtime: ControlWin, Win7	Passed / Released
Visualization - Online (Autotest)	Target Visu Runtime: ControlWin, Win7	Passed / Released
Visualization - Online (Autotest)	Target Web Visu Runtime: Control RTE Browser: Chrome, Win7	Passed / Released
Visualization - Online (Autotest) - Quality Gate	Win7, Control Win, Target Visu	Passed / Released
Visualization - Online (Autotest) - Quality Gate	Win7, Control Win, Integrierte Visu	Passed / Released

Document Release

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