CODESYS Safe Control SL

Safety without compromise: With CODESYS Safe Control SL, you get a certified SIL3 controller without any special hardware requirements. Install it natively on your commercial-off-the-shelf hardware and experience maximum safety - only with CODESYS.

Its safety functionality is based on the certified component CODESYS Safe Control Core - safety manual and certificate of the core apply to this product.

Technical description

Product	*Safe control system certified to ISO 61508 SIL3, purely in software, based on coded processing technology; safety functionality provided by the component CODESYS Safe Control Core*
Safe Control Core version	V4.3.0.0
Delivery form	Debian package (x86-64, ARM64), RPM package (x86-64)
Licensing	Application-based licensing for safe control systems
Maximum size application code	1 MB
Maximum size of application data	1 MB
Demo/test mode	2 hours
Certificates	
ISO 61508 SIL3 certificate	Product certificate issued by TÜV Süd
Safety-related information	
PFH value	$1 * 10^{-10}$
Calculation of safety response time	2 * watchdog time + 2 * safety task cycle time
Resources required	
CPU architecture	x86-64, ARM64
CPU	min. 1.5GHz, max. 15GHz CPU frequency
MultiCore CPU	no restriction
Memory protection/ memory test	no requirements
Communication for standard control	Shared memory
Functions	

POU types	PRG, FB, GVL
PLCopen Safety Basic Level	Yes
PLCopen Safety Extended Level	Yes
PLCopen Safety System Level	No
PLCopen Safety FBs	Yes, version 1.0, except for SafeStop1, SafeStop2 and SafelyLimitedSpeed
IEC 61131 standard library	Yes
Data types	BOOL, BYTE, DINT, DWORD, INT, SAFEBOOL, SAFEBYTE, SAFEDINT, SAFEDWORD, SAFEINT, SAFETIME, SAFEWORD, TIME, WORD
REAL/LREAL data types	No support
Minimum configurable cycle time	1 ms
Number of IEC tasks	1
Number of POUs allowed	Not restricted
Limitation of program complexity	configurable
User management	Yes
Retain data	No support
Qualified monitoring	Yes
Breakpoints	No
Write/Force	Yes
Application Pinning	Yes
Device logbook	Yes
Application logbook	Yes
Safe network variables	No
Standard exchange variables	Yes
Communication in system error	Yes
GIT support	No
Project documentation	Yes
Diagnostic interfaces	SafeControlServices.library

Extension interfaces	None
Field buses	
None	
Safety protocols	
Profisafe Host V2.4	Yes
Profisafe Host V2.6	Yes
Profisafe Device V2.6	No
FSoE Master	Yes
FSoE Slave	No
CIP Safety Originator	No
CIP Safety Target	No
CANopen Safety Master	No
CANopen Safety Slave	No
J1939 Safety	No

Performance

Execution time of the safe IEC application:

Connections + 100 FBs	*Intel i7 10th gen, 3.6 GHz@4 cores, 64 bit*	*Raspberry Pi 5, 64 bit*
4 (Safe XS)	0.3 ms	0.4 ms
8 (Safe S)	0.3 ms	0.5 ms
16 (Safe M)	0.4 ms	0.6 ms
64 (Safe L)	0.9 ms	1.4 ms
192 (Safe XL)	2.3 ms	3.2 ms

General information

Supplier:

CODESYS GmbH
Memminger Strasse 151
87439 Kempten
Germany

Support:

Technical support is not included with this product. To receive technical support, please purchase a CODESYS Support Ticket.

https://support.codesys.com

Item:

CODESYS Safe Control SL

Item number:

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Sales/Source of supply:

CODESYS Store
https://store.codesys.com

Included in delivery:

CODESYS AddOn package which comprises:

- CODESYS Safe PLC as .deb file (x86-64, ARM64) and .rpm file (x86-64)
- Safe time provider as .deb and .rpm file
- Script files to manage the Safe PLC
- CODESYS Device description for Safe PLC
- CODESYS EULA in German and English
- OSS license information
- Release notes
- Safety Manual

System requirements and restrictions

Programming system	• CODESYS Development System V3.5.20.0 or higher • CODESYS Safety Extension AddOn V4.3.0.0 or higher
Runtime system	• CODESYS Control for Linux SL V4.23.0.0 or higher • CODESYS Control for Linux ARM SL V4.23.0.0 or higher (64-bit variant)
Supported platforms	• Debian Linux (x86-64, ARM64) • RedHat Enterprise Linux (x86-64)

Additional requirements	• Control SL to run PROFINET and/or EtherCAT communication • Second independent time source • Optimisation of Linux version for real-time (RT_preempt patch)
Limitations	• When using the CODESYS Safe Control SL, the information in the associated Release Information Document must be observed! • When using the CODESYS Safe Control SL, the workarounds in the CODESYS Safe Control Core Errata List must be taken into account.
Licensing	 Application based license: The CODESYS Control SL runtime system can be licensed with an application-based license. The license is activated on a software-based license container (soft container) that is permanently bound to the device. Alternatively, the license can be stored on a CODESYS key (USB dongle). Note: In demo mode, the software runs for two hours without a license. After that, a manual restart is required.
Required accessories	None

Note: Technical specifications are subject to change. Errors and omissions excepted. The content of the current online version of this document applies.

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