



SAFETY TECHNOLOGY

SAFEPROG 2.6

SAFEOS 2.5

SAFEPROG and SafeOS, the safe IEC 61131 programming system and the safe high-performance runtime system: Two coordinated and certified software components which enable manufacturers of safety controls to produce a complete system according to the requirements of the IEC 61508 (SIL3) with significantly less effort.

SAFEPROG

Regarding its easy handling and its functional range, the safe programming system SAFEPROG is particularly adapted to the specific requirements of the safety technology. A multitude of provident and error-detecting measures ensure a safe programming on the PC.

- Diversified software architecture ensures highest reliability of the safety functionality already in the programming system
- User management with definable access rights
- Logging of user actions
- Password protection of the project and the PLC
- Special data types for the safety technology (e.g. SAFEBOOL, SAFEINT)
- Color marking of different function blocks
- Display of the safe signal path during the application programming
- Easy assignment of different project implementation states/releases using time stamps and checksums
- Parameterization of safety-related device functions using SAFEGRID as integral part
- Integrated report for the validation of the machine's or plant's safety functionality
- C-Interface for complex safety function blocks
- Simulation of the program logic including the timing
- Graphical project comparison

In addition, SAFEPROG provides all usual features known from modern IEC 61131 programming systems, such as cross

references or online operation modes for commissioning the safe control.

The development of the safe PLC program is done in only a few steps using the graphical IEC programming languages Ladder Diagram (LD) and Function Block Diagram (FBD).

Three clearly defined interfaces of SAFEPROG allow the easy integration with customer-specific hardware.

- The communication between SAFEPROG and the safe PLC can be handled via already existing TCP/IP or RS232 interfaces. Here, SAFEPROG secures the data for the transmission. However, it is also possible to integrate another communication interface.
- The safety-related device topology is integrated into SAFEPROG by means of a customer-specific ActiveX Control.
- Customer-specific device descriptions for the safety-related parameterization can be integrated.

SAFE FUNCTION BLOCKS

KW-Software offers an extensive library in combination with SAFEPROG, providing 20 function blocks for the safety technology which are already certified according to the PLCopen safety specification 1.0. The library contains all important safety functions such as Emergency Stop, Safety Door, Two Hand Control, External Device Monitoring, Mode Selector and many more. The use of standardized and already certified safe function blocks considerably simplifies the planning and certification of a machine or plant.



SAFEOS

SafeOS is the 2-channel, diversified, high-performance safe runtime system on the safety control. The redundant software architecture is seamlessly continued by SafeOS on the safe PLC. Completing the additional firmware services provided by SafeOS with customer-specific firmware makes a further operating system superfluous. Further exemplary features of SafeOS:

- High performance by real machine code
- Integration of non-safe signals
- Debug functionality
- Methods for detecting memory errors
- Synchronization data of the two diversified channels
- Extensive diagnosis possibilities
- Runtime monitoring by software watchdog
- Scalable for small and large safety controls

SAFEPROG SYSTEM SPECIFICATION

PC system	Processor	Min. 1 GHz (recommended: 2 GHz)
	RAM	Min. 1 GB (recommended: 2 GB)
	Hard disk	Min. 500 MB free memory
	Communication	TCP/IP and/or RS232
	Operating systems	Windows® XP, Windows® Vista, Windows® 7
Data types	bit stream	BOOL, BYTE, WORD, DWORD, SAFEBOOL, SAFEBYTE, SAFEWORD SAFEDWORD
	numeric	INT, TIME, DINT, SAFEINT, SAFETIME, SAFEDINT
System limits	Global and local variables per project	8000
	Included libraries	20
	User-defined FBs per project (incl. used SafeFBs)	128

SAFEOS SYSTEM SPECIFICATION

System Limits	PLC program size	Depends on the memory available on the target, max. 16 MB
	PLC data size	Depends on the memory available on the target, max. 16 MB
	SafeOS size	Min. memory requirement approx. 10 KByte for each channel (Further memory requirement per channel is to be considered in the customer-specific hardware and the user project.)
	I/O signals	Max. 64 KByte input signals and 64 KByte output signals
	Forced variables	Max. 64
	Processors	ARM (Instruction Set V4.0), Intel X86, PowerPC (other Processors on request)
Performance data ⁽¹⁾	Processor	ARM 266 MHz
	Program execution times for a representative example project with 2KB of memory each for the input and the output signals	< 400 μ s

⁽¹⁾ conditional statement

SCOPE OF DELIVERY

- Software on CD ROM
- License agreement for SAFEPROG and SafeOS
- SAFEPROG Toolkit and SafeOS Toolkit with certificates, user manual and specifications of interfaces
- Possible additional support for IFA and/or TUEV certification
- We offer the required RAM and CPU tests (ARM) on inquiry

KW-Software GmbH
 Langenbruch 6
 32657 Lemgo
 Germany
 Phone +49 5261 9373-0
 Fax +49 5261 9373-726
 Email info@kw-software.com

www.kw-software.com