



Safeguard 400 Series industrial safety controllers are certified to the relevant standards in industrial safety assurance and boast an outstanding performance record: millions of operating hours to date without any performance failures.

Safeguard 400 is an advanced safety controller, providing both fault-tolerant and fail-safe safety functions. It can be equipped with as many as 1500 I/O channels.

As part of the ABB product range, Safeguard 400 can easily be integrated into System 800xA and other automation systems.

Safe and Efficient Engineering

- ◆ Object-oriented configuration
- ◆ Structured function-block programming
- ◆ Single entry and storage of data
- ◆ Cause & Effect programming tool with hierarchical safety shutdown levels
- ◆ Pre-configured signal descriptions, control logic, operator functions and communications
- ◆ Default settings for event and alarm handling, database queries and diagnostic reporting
- ◆ Pre-defined application solutions including logic, graphics, and documentation.

Advanced Alarm Management

All basic functions required in a safety system are preconfigured, making it easy to put them into operation. Events are time-tagged with millisecond accuracy, enabling easy identification of primary alarms.

SOE (Sequence of Events) functions include process sectioning, first-up alarm detection and alarm prioritization.

ABB's control and safety systems use common event & alarm lists.

High Availability

Safeguard 400 is designed to provide maximum process uptime. The system is fault tolerant and has a dual modular redundant configuration, facilitating hot repair.

Connectivity

Safeguard 400 offers several communication solutions for interfacing with other control systems, including System 800xA.

Real-time, diagnostic and historical safety data from Safeguard 400 becomes available at the control-system workplaces. ▶▶

Table 1. Approvals

IEC 61508: 2000 Parts 1-4, SIL 1-3 (to the extent applicable)
DIN V 19250: 1994
EN 61131-2: 2003
EN 54-2: 1997 (to the extent applicable)
prENV 1954: 1995, chapters 4-8
FM 7605: 1999 (to the extent applicable)
DIN VDE 0116: 1989, chapter 8.7
EN 298: 1993, chap- ters 8, 9, 10
NFPA85: 2002, chap- ters 4.3 and 4.5
ISA S84.01: 1996 (to the extent applicable)

Plug-in interface modules provide peer-to-peer networking at the controller level.

Advanced Support for Operations and Maintenance

The management of inhibits and overrides during maintenance and testing is critical in any safety system in order to meet the safety standards. In Safeguard 400, specific inputs can be inhibited, and outputs be bypassed through standardized operator dialogs.

Particular attention has been paid in the design of the bypass management system in Safeguard 400 to access control, safety integrity and bypass status overview.

Diagnostics

Every subassembly in the Safeguard 400 system is automatically included in the system status supervision service. Should any critical component such as the CPU, I/O boards, communication boards or power supplies fail, an alarm will automatically be generated.

Predefined, dedicated system status displays give detailed information about the status and location of sub-assemblies.

SIL- and AK-certified by TÜV

Safeguard 400 is certified as suitable for SIL 1-3 and AK1-6, and its architecture is classified as 1oo2D. Single Safeguard (1oo1D) is certified for SIL 2 and AK 1-4.

Safeguard 400 has been tested and approved according to the standards listed in table 1.

Flexible and Modular Power Supply

System and field power supplies are built up of modular plug-in units mounted in the cabinet and can be delivered for a wide range of input voltages.

System power is always delivered with dual redundancy and utilizes separate power modules for each control branch.

The field power supply can be implemented for any redundancy architecture specified.

Wide Selection of I/O Modules

The range of I/O boards available to Safeguard 400 are listed in table 2:

Table 2. Type number and specifications

31 ch. Safety Digital Inputs	DSDI110NK01 ²	24 VDC
31 ch. Safety Analog Inputs	DSAI133NK01 ²	0...10V, 0...20mA
12 ch. Loop Monitored Digital Inputs	DSAI160 ²	Normally open or N closed
16 ch. Analog Inputs	DSAI130K12 ³	0...±10V, 0...±20mA
32 ch. Analog Inputs	DSAI133K06 ¹	0...10V, 0...20mA
32 ch. Digital Outputs	DSDO115K02 ¹	Status outputs (24V transistor, 150 mA)
4x8 ch. Digital Outputs	DSDO110K04 ¹	24-250V AC/DC Status outputs (relay)
4x7 ch. MasterVote failsafe NE outputs	DSDO110K03 ²	24VDC
4x7 ch. MasterVote-monitored NDE outputs	DSDO110K02 ²	Can be configured freely among NE/NDE/Status outputs, 24VDC, 2A
¹⁾ TÜV approval: Certified, ²⁾ TÜV approval: Certified for safety-critical use ³⁾ Single loop: Non-interference. Dual loop: Certified for safety-critical use.		

For additional information visit us at www.abb.com/controlsystems and click on **Safety Systems** in the list appearing.



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