

cSCALE S9 IP20 Modular PL d / SIL 2-certified controller



Applications

- Mobile Cranes, e.g. telescopic cranes, lattice boom cranes, rough terrain cranes, telehandler
- Road Construction Machinery
- Earth Moving Machinery
- Concrete Machinery
- Agricultural Machinery

Special Features

- 1. PL d / SIL 2-certified hardware and software
- Certified safety CPU
- High-performance application CPU
- Certified arithmetic floating point and trigonometric functions
- Support of redundant system architectures
- CODESYS 2.3 and C/C++ programming
- Uninterrupted Power Supply (5s)
- USB-interface for field-updates

Description

The certified cSCALE S9 IP20 controller contains a unique combination of a high-performance functional CPU in combination with a certified safety CPU. The Hardware as well as the software are completely certified. That allows highly sophisticated application programs to run in the same PLC control system as the SIL 2 safety applications.

cSCALE S9 features a modular number of Inputs/Outputs customizable for use in many mobile machine applications. These applications range from driving different actuators to collecting data from different sensors as well as running special tasks. For example, a rated capacity limiter application is supported by the RCL/ LMI core and available on the qSCALE S9 controller, which is a special variant of the cSCALE S9.

Equipped with an ARM Cortex-A7@528 MHz processor,



cSCALE S9 IP20 trueSafety

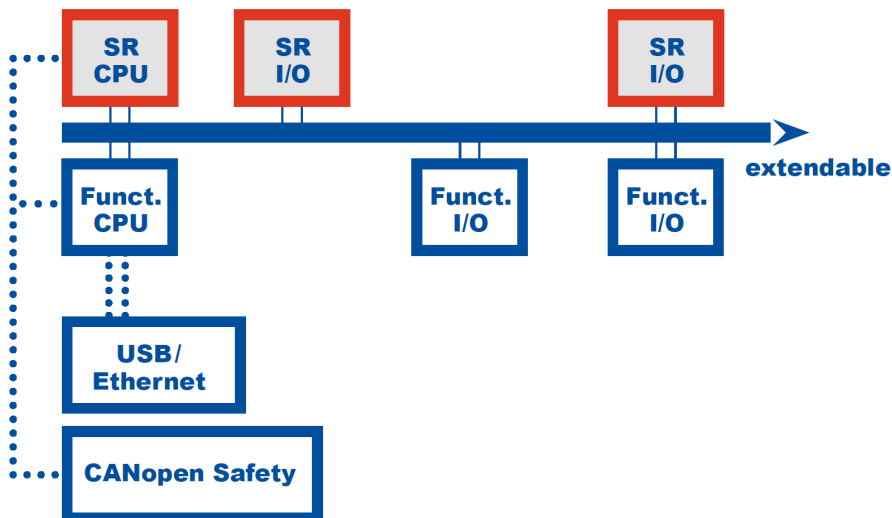
140 MB DDR3 RAM and 235 MB Flash storage, cSCALE S9 enables fast processing of large machine control applications that can be programmed using CODESYS 2.3 and/ or C/C++. Applications or libraries programmed in C/C++ will be running on top of the Linux operating system to meet realtime requirements.

The cSCALE S9 features a SuperCAP-based Uninterrupted Power Supply (UPS) module which ensures a safe shutdown of the controller and a backup of all running processes and RAM data when a power supply voltage drop is detected.

The visualization and administration of control variables and functions are possible through the optional WebVisu interface, which enables users to conveniently access the screens of a cSCALE system using a web browser.

Technical Data

Modell cSCALE S9 IP20	
CPU module	ARM Cortex A7@528 MHz / 32-bit
RAM / Flash / Retain / SD	144 MB DDR3 / 256 MB NAND-Flash / 2 MB / 2 GB (optional)
UPS module	SuperCap-based uninterrupted power supply module: CPU Power Supply extension for Memory Back-up 2 MB DDR3 RAM to FLASH
Operating voltage	8...36 V DC
Operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +85 °C
Housing material	Aluminum
Protection class	IP66/67
EMC	EMC directive 2014/30/EU
Certificate	Certified SIL 2 / PL d Cat.2 controller according to IEC 62061 and EN 13849 TÜV certified in conformity with EN ISO 13849 PL d and IEC 62061 SIL 2 Complete control solutions according to EN 13849/EN 13000
Programming	Programmable with CODESYS 2.3 according to IEC 61131-3 or alternatively in C/C++
EN 13849-1 architecture	Cat. 2
SIL / PL classification	SIL 2 / PL d (TÜV-certified)
Housing	1 / 2 / 4 / 7 Slots



SR = safety relevant
FR = functional relevant

Base Module: IP20 Power Supply with I/O

	SIL 2 / PL d	
	PS5-I/O 01	PS5-I/O 01
DI DIAG	8	8
DO (1 Aav)	4**	4**
DO PWM with CC (2 Aav)	4**	4**
8.2 V power supply (500 mA)	–	•
CANopen power supply (12 V/500 mA) for CAN*	–	–
Voltage	8 ... 48 V	8 ... 48 V

* Future release

** Sum of current 8 Aav

I/O-Modules for cSCALE IP20

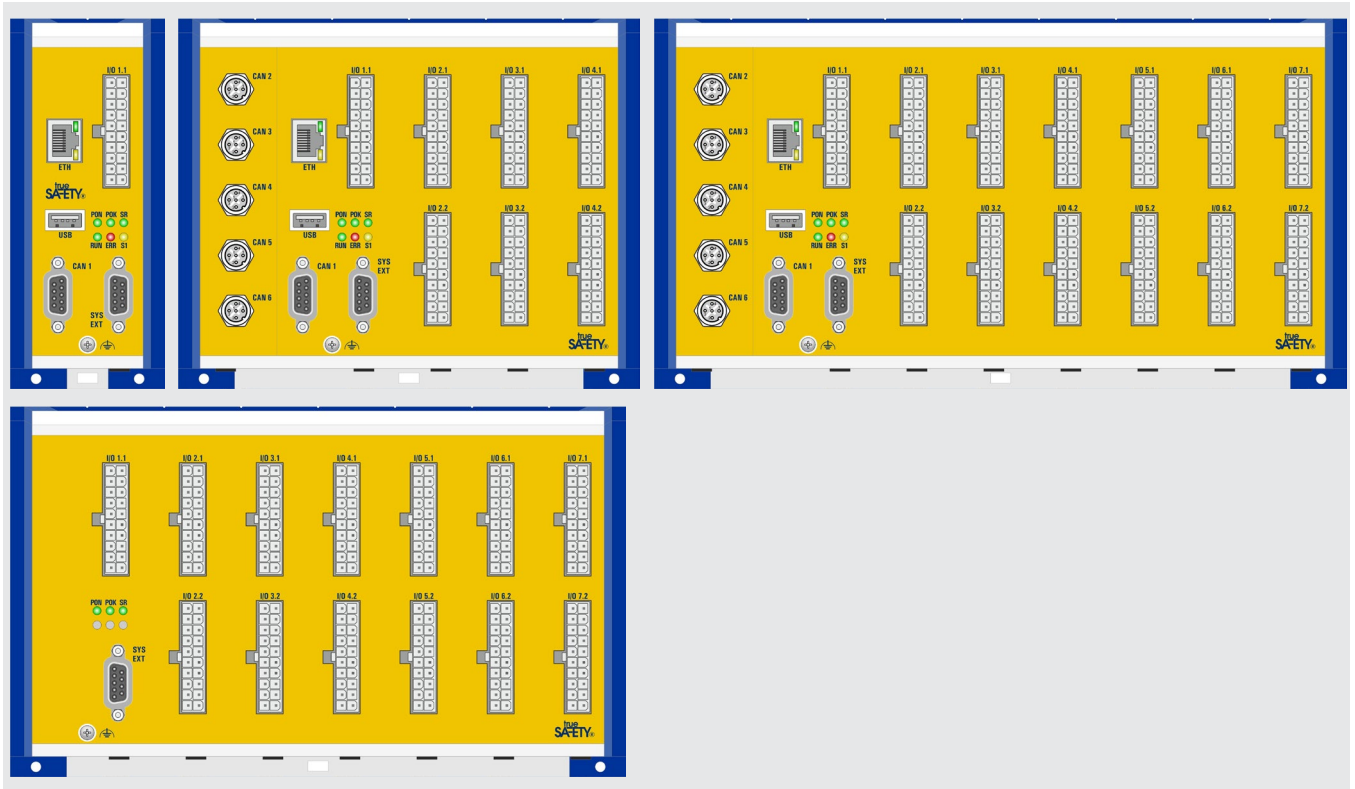
	I/O 03-02	I/O 05-05	I/O 06-06	I/O 04-03	I/O N4-N3
with HSC option	4	–	–	8	8
DIAG	8	–	–	12	–
NAMUR	–	–	–	–	12
AI 4...20 mA AI 0...10 V	8-4 0-4*	–	–	8-4 0-4*	8-4 0-4*
DO (1 Aav)	4**	24**	–	–	–
DO PWM with CC high-side (2 Aav)	4**	–	12***	–	–
DO PWM with CC high-side (4 Aav)	–	–	4***	–	–

* Selection of voltage input reduces number of current input

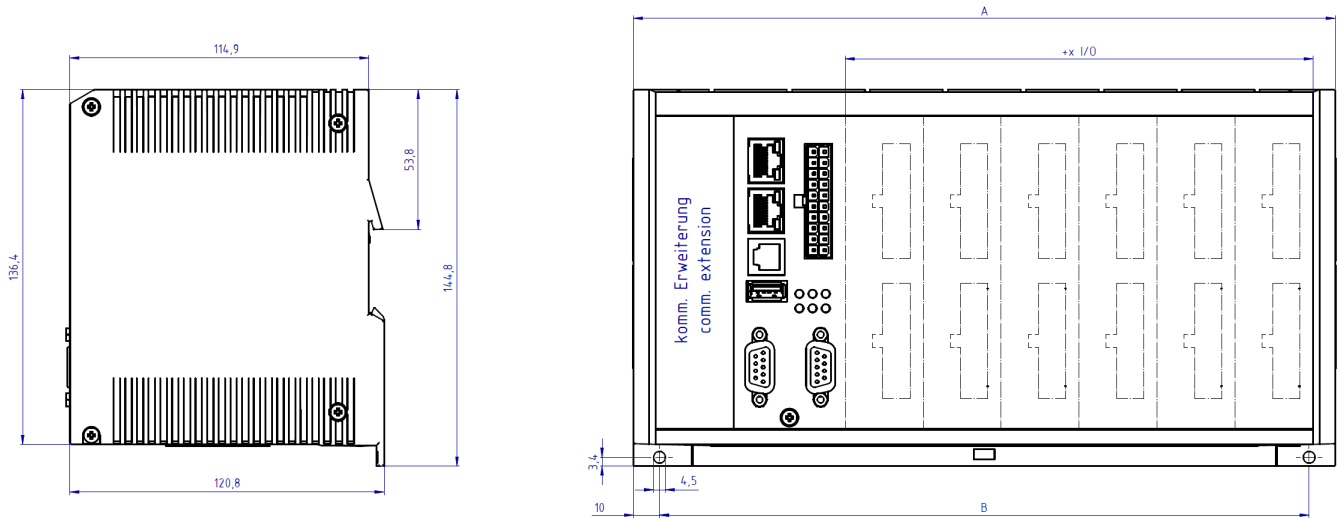
** I/O 02, I/O 05 cell/DO (1 Aav): sum of current 8 Aav

*** I/O 06 cell/DO PWM with CC: sum of current 12 Aav

Example variants



Dimensions



The width A (min. 60 mm, max. 240 mm) depends on the number of I/O modules (30 mm each) plus the width of the optional communication module (30 mm). Dimension B = A minus 20 mm

We reserve the right to make technical changes without prior notice. The individual specifications in this datasheet are warranted properties if they are expressly confirmed by us in writing in the respective case.

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03/2025

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