

Safe signal processing – The PROTECT family

PROTECT SRB-EXi, PROTECT SRB-E,
PROTECT SELECT, PROTECT PSC1



Safe signal processing

The complete Schmersal portfolio

Depending on the complexity and number of safety circuits, the Schmersal Group provides solutions for reliable signal analysis based on safety control modules and safety controllers with an array of visualisation and diagnostic possibilities.

PROTECT SRB modules

- Multi-purpose use, easy installation, low cost solution
- SRB-E-series covers a broad range of applications with eight versions
- SRB EXi modules with ATEX, IECEx and INMETRO approvals
- SRB301ST for lift applications, certified in accordance with EN 81-20/50



PROTECT- SELECT

- Up to 6 safety functions can be realised
- Adaptation to individual requirements thanks to simple parameterisation
- Various parameters such as short circuit monitoring can be configured
- Save space in the control cabinet
- Display of clear text messages during troubleshooting

**Modular safety compact controller
PROTECT PSC1**

- Freely programmable compact controller PSC1-C-10 and PSC1-C-100
- Programming software SafePLC2: Modern, object oriented application development environment
- »Save Drive Monitoring« module (SDM) monitors up to 12 axes
- Universal communication interface for all common field-bus systems
- Modular expansion with up to 272 inputs/ outputs





Modular compact controller PROTECT PSC1

PROTECT PSC1-C-10: up to 2 expansion modules / 64 I/Os

The compact controller PROTECT PSC1-C-10 can be expanded with up to 2 I/O expansion modules.
A mixture of centralised and decentralised structures can be used.



Central structure:
I/O expansion modules



Decentral structure:
Expandable with the
remote I/O module

PROTECT PSC1-C-100: up to 8 expansion modules / 272 I/Os

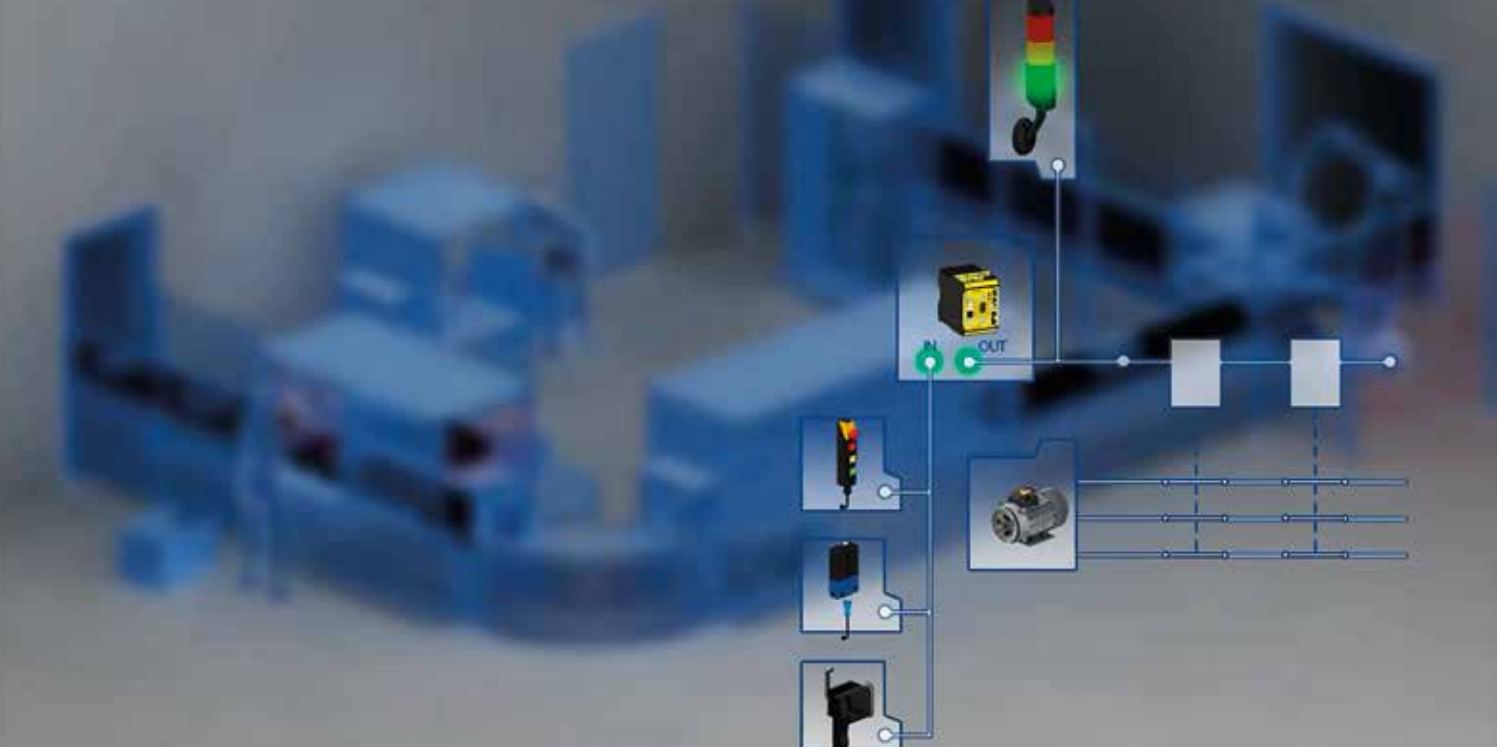
The compact controller PROTECT PSC1-C-100 can be expanded with up to 8 I/O expansion modules.
A mixture of centralised and decentralised structures can be used.



Central structure:
I/O expansion modules



Decentral structure:
Expandable with the
remote I/O module



Safe Drive Monitoring (SDM) for PROTECT PSC 1

Safe drive monitoring for up to 12 axes

For safe drive monitoring many safety features are supported:

- **Safe shut-down:** Safe Torque OFF (STO), Safe Brake Control (SBC)
- **Safe stopping:** Safe Stop 1 (SS1), Safe Stop 2 (SS2), Safe Operating Stop (SOS)
- **Safe movement:** Safely-Limited Speed (SLS), Safe Speed Range (SSR), Safe Direction (SDI), Safely-Limited Acceleration (SLA), Safe Acceleration Range (SAR)
- **Safe monitoring:** Safe Speed Monitor (SSM), Safe Cam (SCA)
- **Safe Positioning:** Safely-Limited Position (SLP), Safely-Limited Increment (SLI), Safely Emergency Limit (SEL)

The drive monitoring is carried out depending on the application requirements, with one or two encoder systems. The following encoder signals are supported:

- **1 encoder system:** TTL, SIN/COS, SSI (Gray code / binary code)
- **2 Encoder systems:** TTL, SIN/COS, SSI (Gray code / binary code), Resolver, HTL





PROTECT - SELECT

Multi-functional Safety Module with Program Selection Function

With the multi-functional PROTECT SELECT compact safety module, the engineer has greater flexibility during configuration of the safety device and its subsequent integration into the machine functions.



Four different programs are available. Each program can be precisely adapted – without any programming knowledge, simply with the menu and clear text messages – to the specific application case. This allows for example the release delay and the de-bounce time to be set individually, and numerous parameters such as the cross-wire monitoring to be set as required – a definite advantage in comparison to safety relay modules.

With every application program the user profits from numerous functions – such as:

- Connection of up to six dual-channel safety switching devices (with or without potential) up to PL e/SIL 3
- Safety semi-conductor and relay outputs with STOP 0 or STOP 1 function
- Safe analogue monitoring of temperature and other process variables
- Free assignment of start-up tests, periodic tests, auto-start, manual start
- Cross-wire detection
- Display of clear text messages during troubleshooting
- Input filter for safety devices with contact bounce



PROTECT SRB-E modules

Safe signal processing for a range of applications

All eight versions of the new family of safety relay modules PROTECT SRB-E can be used in applications up to Cat. 4/PL e in accordance with EN ISO 13849-1 and up to SIL 3 in accordance with EN 62061/IEC 61508.

A major advantage of the new PROTECT SRB-E series is its multi-functionality which allows all the variants to be used with several dozen existing SRB modules. Each module can be configured for up to eleven different applications via a simple control element. All conventional safety sensors and electromechanical safety equipment can be monitored.

The drastic reduction in the number of variants and the clear display of the relevant functions makes it considerably easier for the machine manufacturer to select the right module for their particular application.

Adjustable configuration and applications

Flexible

- 1 or 2 channel signal evaluation
- Contact configuration can be selected for the sensors
- Start/Reset functions with monitoring
- Input expanders for 4 sensors up to PL e
- Cascading via safe inputs
- Combined evaluation for 2 safety guards
- Two-hand control monitoring
- STOP Category 0 and 1
- Up to 5 safety outputs
- Safety category 4, PL e semi-conductor outputs up to 5.5 A

User-friendly

- Up to 11 different applications can be selected
- Monitoring of all conventional safety switchgear
- Safety level of up to PL e/SIL 3 can be achieved
- Simple adjustment using rotary switch
- Selected application can be locked using seal
- Quick response time (< 10 ms) to request
- Excellent switching performance and short cycle times
- Slot-in termination with coding

Compact

- Installation width for all device variants 22.5 mm
- Up to 10 safe inputs and 5 safe outputs
- Up to 4 signalling outputs
- Holder for equipment label
- Up to 24 connecting terminals





Connection option for all standard safety switchgear



Function setting via rotary knob mode



Adjustment of drop-out delay (stop category 1) via rotary switch for time

PROTECT SRB-EXi modules

Safe signal processing with the intrinsic safety of ignition protection

These devices combine functional safety, reliable signal analysis and safety approval with explosion protection. They monitor the connected sensors, reset buttons, emergency stop devices, locking mechanisms and safety sensors with the intrinsic safety of the "I" ignition protection.

The sensors can be installed or implemented in zones 1/2 and 21/22.

The PROTECT SRB-EXi modules can be installed in a suitable switching cabinet in gas explosion safety zone 2.

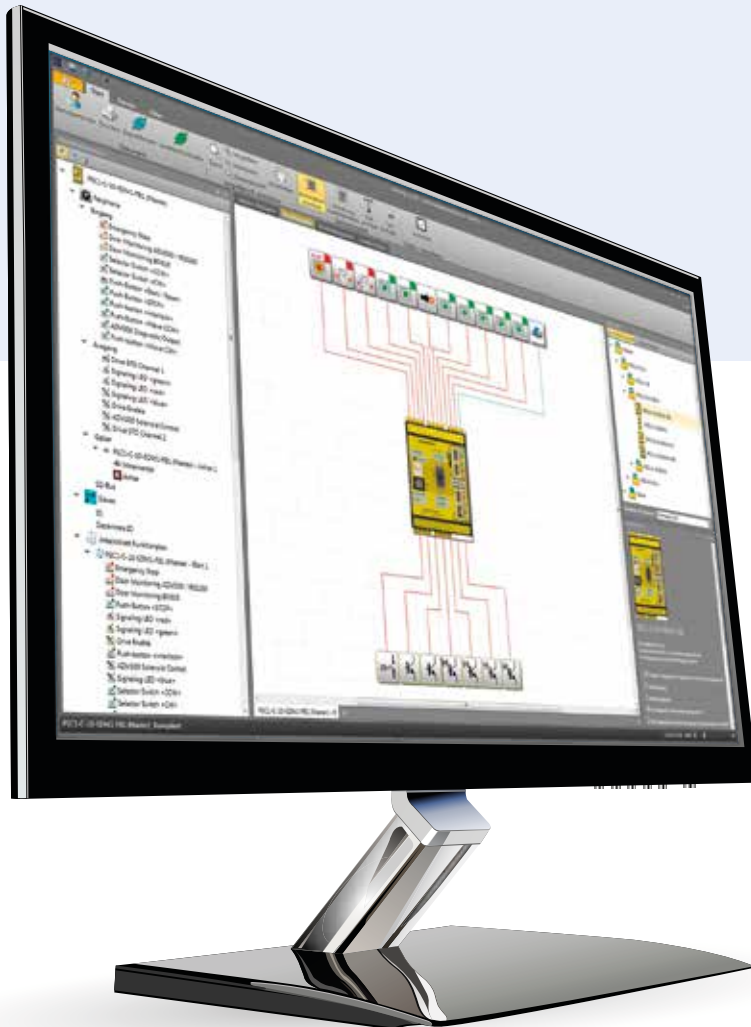
Approvals category (2) GD / 3 G:

- ATEX
- IECEX
- INMETRO



User Software

Programming software SafePLC2



Programming software SafePLC2 for PROTECT PSC1

- Modern, object oriented application development environment
- Preconfigured elements for safe electronic and electromechanical switching devices
- Easy reuse of application code by macros
- Programming assistance by various search functions
- Simple signal tracking by different colour representation and status messages
- Easy to detect safety functions through practice oriented libraries for logic,
Safe Drive Monitoring, SD-bus and encoder elements
- Configurable user permissions



The Schmersal Group

In the demanding field of machine safety, the owner-managed Schmersal Group is one of the international market leaders. The company, which was founded in 1945, has a workforce of about 2000 people and seven manufacturing sites on three continents along with its own companies and sales partners in more than 60 nations.

Customers of the Schmersal Group include global players from the area of mechanical engineering and plant manufacturing as well as operators of machinery. They profit from the company's extensive expertise as a provider of systems and solutions for machine safety. Furthermore, Schmersal specialises in various areas including foodstuff production, the packaging industry, machine tool industry, lift switchgear, heavy industry and the automotive industry.

A major contribution to the systems and solutions offered by the Schmersal Group is made by tec.nicum with its comprehensive range of services: certified Functional Safety Engineers advise machinery manufacturers and machinery operators in all aspects relating to machinery and occupational safety – and do so with product and manufacturer neutrality. Furthermore, they plan and realise complex solutions for safety around the world in close collaboration with the clients.

Safety Products



- Safety switches and sensors, solenoid interlocks
- Safety controllers and safety relay modules, safety bus systems
- Optoelectronic and tactile safety devices
- Automation technology: position switches, proximity switches

Safety Systems



- Complete solutions for safeguarding hazard areas
- Individual parametrisation and programming of safety controllers
- Tailor-made safety technology – be it for individual machines or a complex production line
- Industry-specific safety solutions

Safety Services



- tec.nicum academy – Seminars and training
- tec.nicum consulting – Consultancy services
- tec.nicum engineering – Design and technical planning
- tec.nicum integration – Execution and installation

The details and data referred to have been carefully checked.
Technical amendments and errors possible.

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2.000 / L+W / 11.2017 / Teile-Nr. 103014039 / EN / Ausgabe 02



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