

The flexible compact safety controller

PROTECT SELECT



SCHMERSAL

Safe solutions for your industry

PROTECT SELECT

High flexibility -

User-friendly

- Simple and flexible parameter setting
- No programming skills required
- Multilingual menu navigation via colour display
- Cleartext error and status messages

Compact

- Replaces up to eight safety relays up to PL e / SIL 3
- Compact safety technology in 52 mm housing
- 18 safety inputs for the redundant monitoring of all common safety sensors, such as emergency stop, light-grids, safety switches, safety mats, etc.
- 4 safety semi-conductor outputs
- 2 safety relay outputs
- 4 optional signal outputs



easy configuration

Flexible

- Optimal adaptation to particular applications
- Adjustable fail-safe timer
- Filter and monitoring functions for all inputs
- Individual input parameterization

Reliable

- Safe analog inputs
- Integration of critical process variables (temperature, pressure, flow rate, etc.) into the safety concept
- Individual parameterization of threshold values

Economical

Saves time and money in terms of ...

- Project planning
- Wiring
- Programming
- Functional testing
- Maintenance





Optimal adaptation to the individual application

The compact safety controller PROTECT SELECT offers engineers high flexibility for configuring safety devices and for integrating safety devices into machine functions.

Four different basic programs are available. Each program can easily be adapted to the respective application via menu navigation and cleartext messages. Programming skills are not required. Thus e.g. the drop-out delay and debouncing times can be set individually and numerous parameters such as cross-circuit monitoring can be configured according to the requirements – a clear advantage compared to safety control modules. In addition, each application program is provided with a separate port for an emergency stop function. It can also be configured for the use with other safety switching devices.

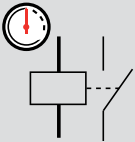
PROTECT SELECT cannot only be flexibly adapted to different applications, but also helps to save space in the control cabinet when it is used to replace more than three safety control modules. All of the four programs offer numerous functions, including the following:

Application program no.	1	2	3	4
Safety areas	1	2	1	1
Inputs:				
Sensors with adjustable parameters	5	1 + (2 / 3)	6	2
Operating mode switches / consent switches	Yes	-	-	-
Muting function	-	-	-	Yes
Prioritised emergency stop	No	Yes	Yes	No
RESET	1	3	2	1
Feedback circuit	1	2	1	1
Relay and semi-conductor outputs				
Stop 0	Yes	Yes	Yes	Yes
Stop 1 with fail-safe timer	Yes	Yes	Yes	Yes

- Connection of up to 8 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 (adjustable)
- Safe analog monitoring of temperature and other process variables
- Free assignment of feedback circuit, start-up tests, periodic tests, auto start, manual start etc.
- Cross-circuit detection via clock outputs
- Display of cleartext messages during troubleshooting
- Input filter for safety devices with contact bounce

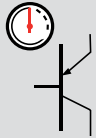
Outputs

2 x Relay



Stop 0/1

4 x Semi-conductor



Stop 0/1



Inputs



Application program 1:

One safety area with operating mode switch / enabling switch

Program 1 allows to connect up to four dual-channel safety switching devices, each of which can be bridged by means of operating mode switches and enabling switches. The program is ideally suited for hazardous areas where additional operating modes such as "setting-up mode" and "process monitoring" are facilitating tasks like setting up a machine or troubleshooting.

- Up to 4 safety switching devices can be bridged in conformance with standards
- Additional emergency stop function
- Direct control of a solenoid interlock (lock/unlock)

Details



Clear view onto process

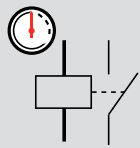
Additional operating modes can be useful e.g. when a machine needs to be set-up or adjusted after a tool change.



Setting-up mode and process monitoring

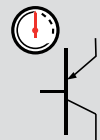
Operating modes such as the setting-up mode and process monitoring can be realised with PROTECT SELECT and application program 1.

Outputs
2 x Relay



Stop 0/1

4 x Semi-conductor



Stop 0/1



Inputs
Area 1



Area 2



Application program 2:

Two safety areas

It is often useful to provide two separate safety areas for the particular workplaces on machines. Program 2 has been developed for this application. Here is an example from the packaging machine industry: The upper part of the machine is the work area, where packaging units are fed and packaged. The lower part of the machine houses the material feed mechanism and the drive units. It must only be accessed for maintenance purposes, but must still be monitored with a safety switching devices. This functionality can be achieved with application program 2 of PROTECT SELECT.

- For up to 3 safety switching devices per safety area
- Start/reset function for each safety area
- Feedback circuits for each safety area
- Prioritised emergency stop with independent reset function

Details



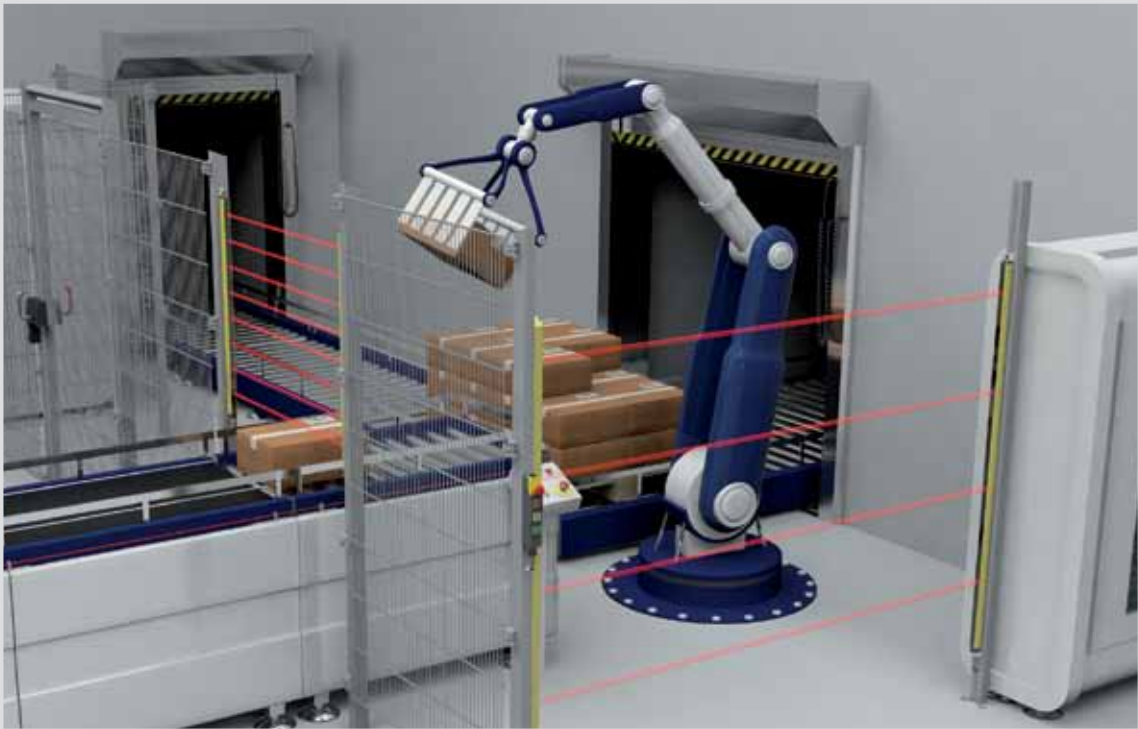
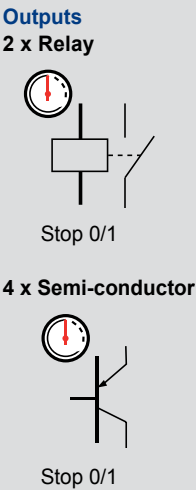
Work area

The work area can be protected by up to 3 safety switching devices which can be configured individually.



Service / material supply

The area below (or above) the work area is considered to be an independent safety area and is thus configured separately.



Inputs



Application program 3:

One safety area with up to six safety switching devices

Program 3 can be used for processing signals of up to 6 safety switching devices. The application program allows to assign a separate reset function to one of the safety switching devices. This way even the most complex safety areas which are monitored by several safety switching devices can be conveniently configured.

- For up to 6 safety switching devices
- Direct control of a solenoid interlock (lock / unlock)
- Prioritised emergency stop with independent reset function

Details



Many switching devices – one evaluation

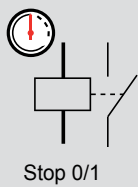
PROTECT-SELECT operating in program 3 replaces up to 6 safety control modules and thus helps saving money and space in the control cabinet.



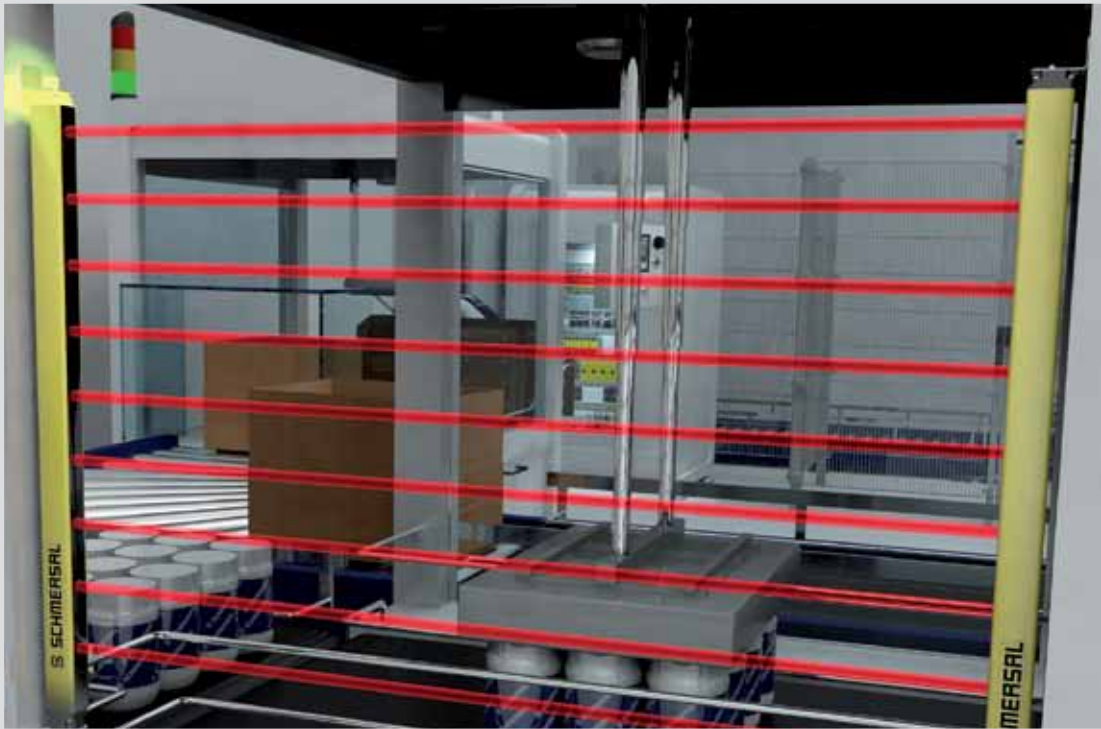
Multi-purpose use

Program 3 is e.g. ideally suited for safety areas which are monitored by several safety switching devices.

Outputs
2 x Relay



4 x Semi-conductor



Inputs



Application program 4:

One safety area with safe bridging (muting)

In order to ensure a material transport into and out of a safety area without provoking a machine stop, an optoelectronic safety device which is bridged automatically and for a limited amount of time should be used.

Usually a safety light-grid with integrated muting function is required for this purpose. When PROTECT SELECT is used, the muting function can be monitored directly via standard safety light-grids and sensors. In addition, signals from 2 other safety switching devices can be processed. This enables the user to realise a complete muting application with e.g. an additional guard door and an emergency stop function.

- Muting function with standard optoelectronic safety devices
- Flexible muting time parameterization
- Connection of additional emergency stop function and safety switching device
- Direct control of a solenoid interlock (lock / unlock)

Details



Muting boosts productivity

The muting function enables safe monitoring of the access to the hazardous area without interruptions of the material flow or the work flow.



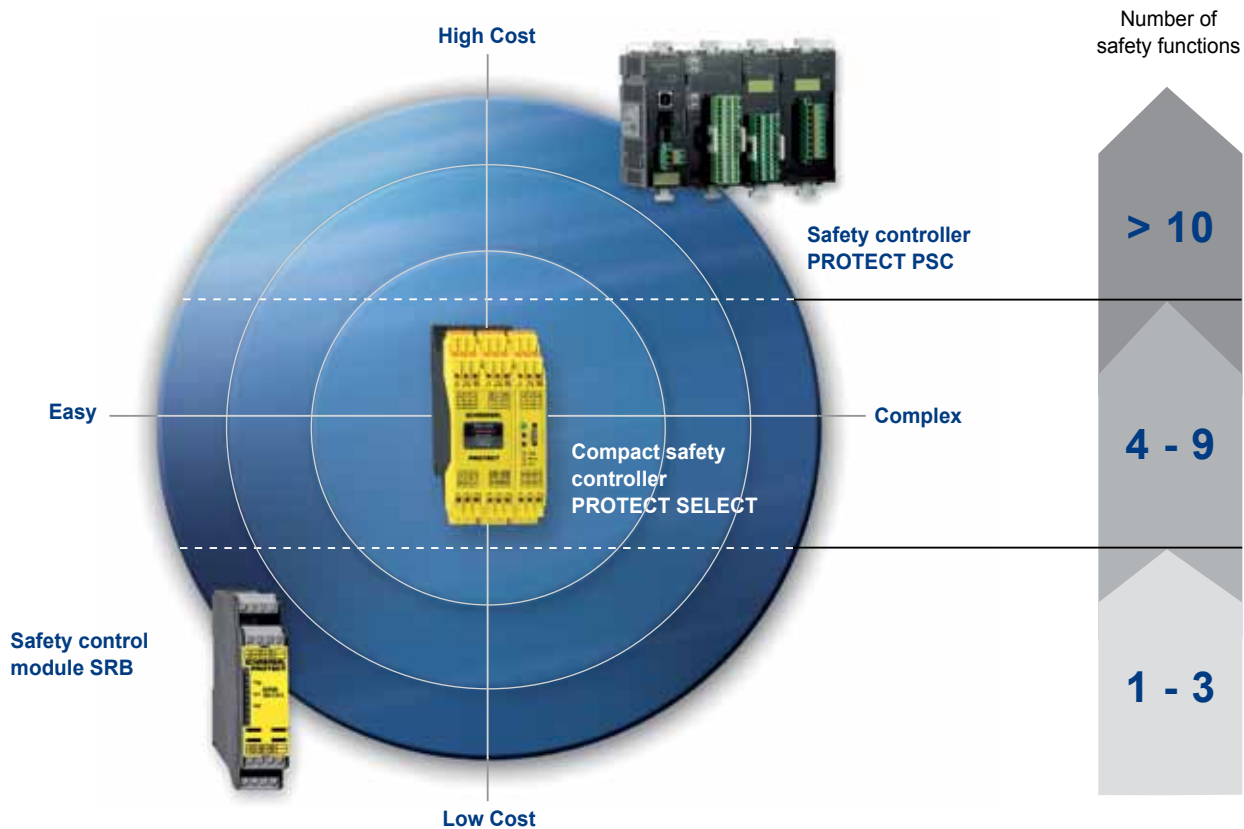
All functions combined in one module

All safety functions for safety areas with muting are controlled via one PROTECT SELECT unit – including e.g. a solenoid interlock and an emergency stop function.

Technical data

Features of PROTECT SELECT		
Inputs	18 digital safety inputs	up to 9 dual-channel safety inputs Cat. 2 / PL c / SIL CL 1 in case of single-channel use Cat. 4 / PL e / SIL CL 3 in case of dual-channel use
	2 safe analogue inputs	Cat. 3 / PL d / SIL 2 in case of single-channel use Cat. 4 / PL e / SIL 3 in case of dual-channel use Resolution: 12 bits
Outputs	4 safety semi-conductor outputs	p-type + n-type safety semi-conductor outputs p-type safety semi-conductor outputs 700 mA per semi-conductor output at 24 VDC Cat. 1 / PL c / SIL 1 in case of single-channel use Cat. 4 / PL e / SIL 3 in case of dual-channel use
	2 safety relay outputs	up to 4 A at 250 VAC up to 4 A at 24 VDC Cat. 1 / PL c / SIL 1 in case of single-channel use Cat. 4 / PL e / SIL 3 in case of dual-channel use
	4 optional signal outputs	max. current of 100 mA at 24 VDC
	3 clock outputs	max. current of 100 mA at 24 VDC
Dimensions (width x height x depth)		52.5 x 100 x 118 mm
Ambient conditions		Ambient temperature: -25 °C ... +55 °C Enclosure: IP20 Installation location: control cabinet
Safety classification		Up to PL e according to EN ISO 13849-1 and SIL 3 according to EN IEC 62061

Position in technological and economical context



... closes gap between conventional safety control modules and complex safety controllers.



For many years the privately owned Schmersal Group has been developing and manufacturing products to enhance occupational safety. What started out with the development and manufacture of a

Motivated by the vision of a safe working environment, the Schmersal Group's engineers are constantly working on the development of new devices and systems for every imaginable application and requirement of the different industries. New safety concepts require new solutions and it is necessary to integrate new detection principles and to discover new paths for the transmission and evaluation of the information provided by these principles. Furthermore, the set of ever more complex standards, regulations and directives relating to machinery safety also requires a change in thinking from the manufacturers and users of machines.

These are the challenges which the Schmersal Group, in partnership with machinery manufacturers, is tackling and will continue to tackle in the future.

very wide variety of mechanical and non-contact switchgear has now become the world's largest range of safety systems and solutions for the protection of man and machine. Over 1,200 employees in more than 50 countries around the world are developing safety technology solutions in close cooperation with our customers, thus contributing to a safer world.

Product ranges	Industries	Services	Competences
 Safe switching and monitoring ■ Guard door monitoring safety switches ■ Command devices with safety function ■ Tactile safety devices ■ Optoelectronic safety devices Safe signal processing ■ Safety monitoring modules ■ Safety controllers ■ Safety bus systems Automation ■ Position detection ■ Command and signalling devices	 ■ Elevators and escalators ■ Packaging ■ Food ■ Medicine/ pharmaceuticals ■ Machine tools ■ Wood working ■ Construction machines and cranes ■ Renewable energy sources ■ Automotive ■ Chemical industry	 ■ Application advice ■ CE conformity assessment ■ Risk assessment in accordance with the Machinery Directive ■ Stop time measurements ■ Training courses	 ■ Machine safety ■ Automation ■ Explosion protection ■ Hygienic design

All data mentioned in this flyer have been carefully checked. Technical modifications and errors excepted.

