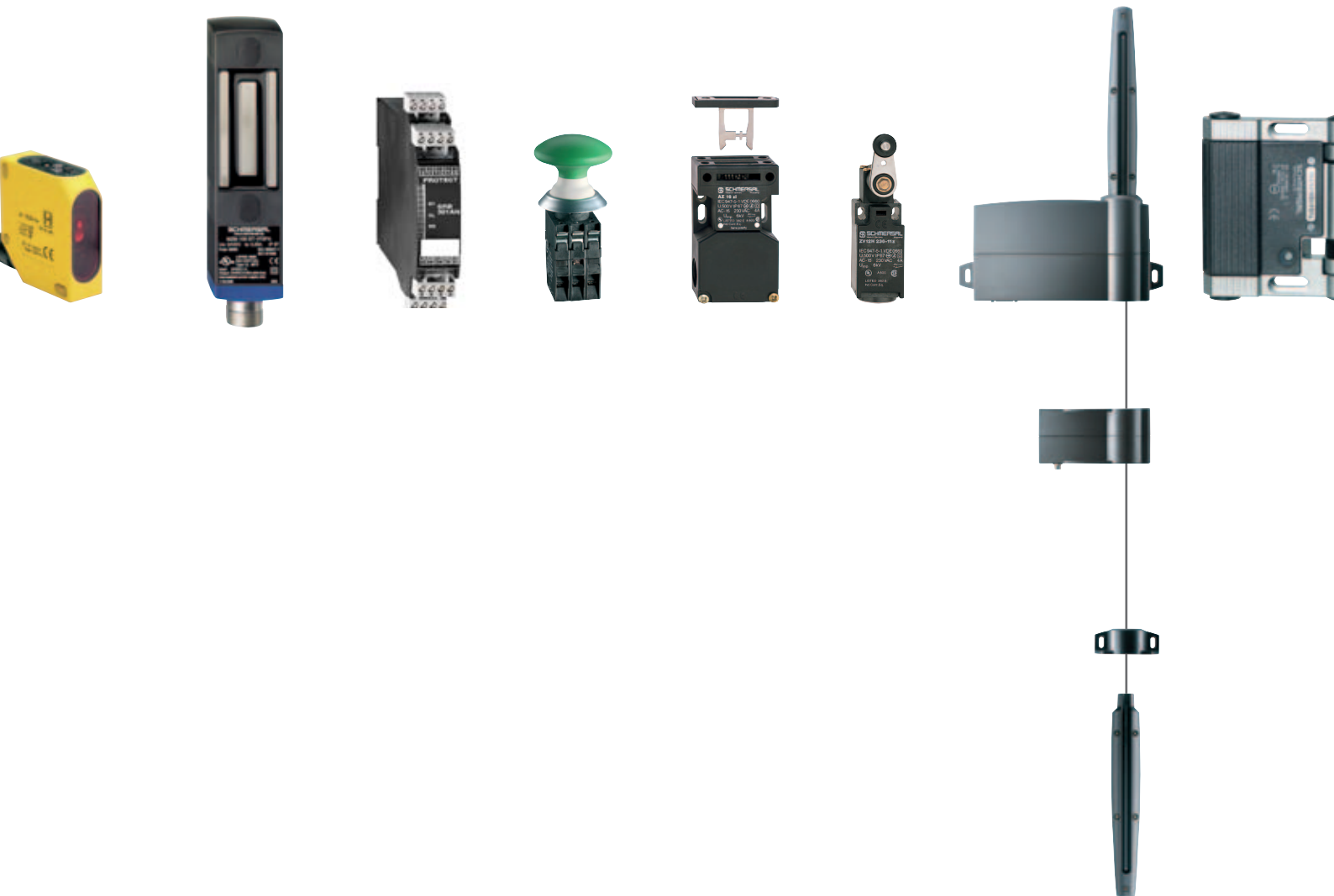


# Safety in system: Protection for man and machine.

## Product Overview | Edition 03



# Safety in system: Protection for man and machine.

Welcome to the Schmersal Group
















Welcome to the Schmersal Group  
We are happy about your interest and would like to give you a quick insight into our program which addresses to all fields of the manufacturing industry, machinery and plant industry.

Our motto is Safety in System: Protection for Man and Machine. In this sense we would also like to help you personally.

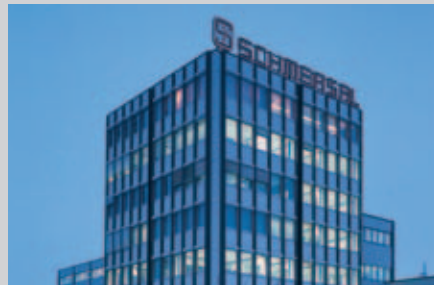
You can find your contact person on the pages 22/23 or at [www.schmersal.com](http://www.schmersal.com).

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# The Schmersal Group

The Schmersal Group offers the largest program of safety switchgears and safety switching systems in the world. The individual development and production units of the group are concentrating on specific product groups. Our sales offices and partners provide a competent consultancy and service to the major industries – worldwide.



## **K.A. Schmersal GmbH** **Safety control systems**

K.A. Schmersal, the parent company of the Schmersal Group, was founded at Wuppertal in 1945 by the fathers of the current generation of shareholders.

Initially, the company concentrated on the development and production of mechanically operated switchgears for mechanical engineering and lift technology. The product portfolio was continuously extended with mechanically operated safety switchgears and non-contact functioning safety sensors.

In the early nineties, the Machinery Directive has been implemented. Schmersal began to develop safety switchgears, enabling the machine and plant builders to comply with the stringent safety requirements for machine safety.

The conversion from industrial safety switchgear manufacturer to expert in safety technology became essential for the company's growth and the company's expansion to a worldwide present company group.

At the Wuppertal plant, about 540 employees are currently employed.

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## **Elan Schaltelemente** **GmbH & Co. KG**

Founded originally in Düsseldorf in 1952, Elan moved to Wettenberg in the Mittelhessen district in 1988.

Elan's focal business emphasis is placed on industrial low-voltage switchgears. Elan develops and manufactures switchgears, which distinguish from the conventional devices, by their mechanical, electrical and functional features.

Elan is one of the pioneers of safety technology: in the eighties, the company has already developed safety switchgear and systems for human protection.

Since 1997, Elan belongs to the Schmersal Group, where it has become the competence centre of the group for

- Control devices and indicator lights;
- Two-hand control panels,
- Safety relay modules and similar modules,
- Proprietary programmable electronic systems with safety function
- ATEX-Product

In 2001, the company moved to a completely new production and administrative building at the same location, where currently 170 employees are working.

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**ACE Schmersal  
Eletrônica Industrial Ltda.**

Schmersal founded a subsidiary company in Brazil as early as 1974. The production facility located in Boituva (Sao Paulo) today has about 300 employees.

ACE offers a wide range of electromechanical and electronic products such as safety switchgears, command and signalling devices, foot switches and proximity switches.

Furthermore thermoplastic housings are manufactured which are partly assembled with command and signalling devices according to the customers's request. Application fields are inspection control panels for the lift technology, for which door contacts are also produced.

The ACE program is mainly distributed on the South American and Mexican market.

**ACE Schmersal  
Eletrônica Industrial Ltda.**

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**Schmersal Industrial Switchgear  
Co. Ltd**

Schmersal has its own manufacturing plant in China since 1999. Here, about 100 employees produce – to the same quality standards as in the European factories – position switches, safety switches and lift switchgears for the South-East Asian market.

Our sales office located in the centre of Shanghai supervises and co-ordinates four subsidiaries with offices in the major industrial centres of China.

**Schmersal  
Industrial Switchgear**

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# Safe switching and monitoring

## Guard door monitoring – Interlocking devices and solenoid interlocks

The extraordinary comprehensive product range from the Schmersal Group for monitoring hinged, removable and sliding safety guards enables an accurate adaptation of the protective device to the specific application.

If special requirements e.g. with regard to explosion protection, hygiene, compactness, holding force, actuation or wiring possibilities have to be met, suitable solutions are available as well, also for areas with bodily access.



Electronic solenoid interlocks with manual and optional emergency releases



Thermoplastic solenoid interlock



Solenoid interlock, slim design



Thermoplastic solenoid interlock, compact design



Metal solenoid interlock

# Safe switching and monitoring

## Guard door monitoring – Safety switches



Safety switch with individual coding



Safety sensors with magnetic operating principle



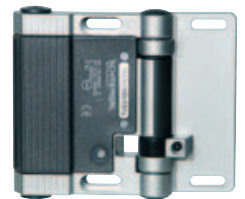
Safety switch



Cable-free systems / key trapped systems



Position switches with safety function



Safety switches for hinged guards

# Safe switching and monitoring

## Command devices with safety function

The control devices of the Schmersal Group always ensure a safe and reliable transmission of the operator's commands, regardless if safe stopping from dangerous movements or start-up of critical machine functions are concerned.

Apart from many special constructive features, these devices have a long life and an intelligent ergonomic construction.



Pull-wire Emergency-Stop switches



Emergency-Stop push buttons



Enabling switches



Two-hand control panels



Safety foot switches



# Safe switching and monitoring

## Tactile safety devices

Wherever crushing or shearing points are to be safeguarded, such as on elevating platforms, rising stages, sliding doors or industrial gates, tactile safety devices offer a simple and easy to fit solution.

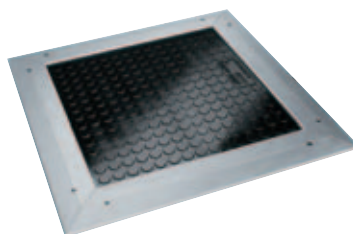
In the hazardous area, two-dimensional safety devices could be useful as well, for instance at industrial robots, punching machines and woodworking machines.



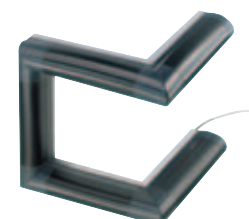
Safety edges



Safety bumpers



Safety mats



Safety edges  
for corner applications

# Safe switching and monitoring

## Electronic safety sensors and solenoid interlocks

The electronic monitoring of movable safety guards, including the actuation in non-contact solenoid interlocks, enables a non-contact and wear-free detection of the corresponding actuator. The applied pulse-echo technology tolerates large misalignments both in the switching distances and in the approach of the coded actuator. Despite this, the switching points and hysteresis have a high and constant repeat accuracy.

The safety channels of the electronic sensors and electronic solenoid interlocks can be series-wired, depending on the used component type up to a maximum of 31 devices. In this series-wired chain, control category 4 to EN 954-1 is still achieved because of the autonomous function test. The chains can also have a mixed structure, i.e. the here-described safety sensors and solenoid interlocks can be arbitrarily combined.



Electronic solenoid interlock with magnetic operating principle and intelligent diagnostics



Electronic solenoid interlocks with separate actuator



Safety sensors with inductive working principle



Electronic safety sensors with 4 actuating planes



PROFIBUS-Gateway

# Safe switching and monitoring

## Non-contact guard door monitoring

Safety sensors are particularly advantageous on safety guards, which cannot be protected by means of conventional safety switches due to their design or the environmental conditions. They are especially suitable for use in areas with a high degree of dust and pollution.

Due to their non-contact operating principle, safety sensors feature smooth fitting and a large tolerance with regard to misalignments of sensor and actuator. For special requirements, e.g. with regard to explosion protection, hygiene, increased switching distances or wiring possibilities, suitable solutions are available as well.



Non-contact safety sensor with ergonomic door-handle



Safety sensors, rectangular design



Safety sensors, cylindrical design



Safety relay module



Safety sensors, extremely compact rectangular design



Safety sensors, cylindrical design

# Safe switching and monitoring

## Optoelectronic safety devices

The Schmersal Group offers both electro-mechanical safety devices with physical separation and non-contact safety devices. As a partner of safety technology, Schmersal offers solutions for an efficient optoelectronic monitoring of hazardous areas.

The program includes, amongst others, safety light barriers and safety light grids that can be used up to control category 4 to EN 954-1. Often, these devices offer a higher degree of flexibility than the conventional electromechanical safety devices.



Safety light grids with integrated muting function



Safety laser scanner



Safety light curtains



Safety light barriers  
Control category 4



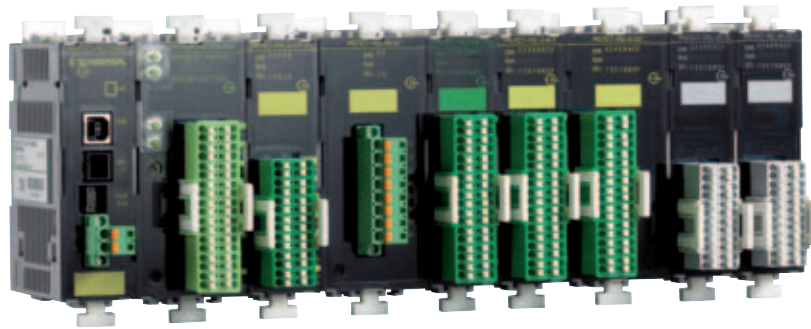
Safety light barriers  
Control category 2

# Safety monitoring modules

## Safety monitoring modules, control units and field bus systems

Apart from the conventional safety relay modules, the Schmersal Group also offers microprocessor-controlled safety technology. Depending on the complexity and the number of safety circuits, integral solutions with safety

monitoring modules, safety control units or safety field bus systems featuring many visualisation and diagnostic possibilities are available.



PROTECT PSC safety control



ESALAN Safety Controller



Safety relay module with removable terminals



Safety relay module, multifunctional (e.g. delayed releases)



Standstill monitors and delay timer

# Safety monitoring modules

## Safety bus systems

AS-Interface Safety at Work (SaW) is a safe and worldwide successful bus system, based on the open AS-International standard. Safety components such as emergency stop, safety switches, solenoid interlocks or safety light curtains are smoothly interconnected through the yellow AS-Interface cable.

The information of the safety components is transmitted through the AS-Interface network and monitored by the safety monitor. If a safety circuit is triggered or in case of failure of a safety component, the safety monitor puts the machine or installation safely to a hold position.



Safety monitor  
AS-Interface  
Safety at Work



Safety sensors



Safety switches



Solenoid interlocks



Solenoid interlocks

# Automation technology

## Position detection

The application field of electromechanical and contact-free position switches from the Schmersal Group ranges from high-precision mechanics to heavy-duty machine construction.

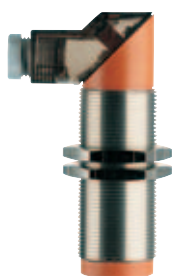
Magnetic switches and inductive, optical and capacitive proximity switches belong to the category of contact-free devices, i.e. switches operating without physical contact. Many switches can also be used as position switch with safety function.



Metal and thermoplastic standard switches



Magnetic switches



Proximity switches



Sensors for high EMC loads



Position switches



Micro switches

# Automation technology

## Position detection

A large range of actuating elements enables an optimal adaptation of the switches to the specific application.



Heavy-duty limit switches



Mounting rails and cams



Press-on position switches



Magnetic switch, robust design



Multi-position switches for series wiring



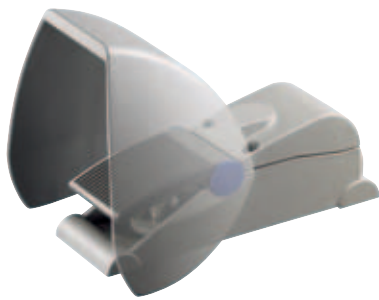
# Automation technology

## Command and signalling devices

For the man-machine interface, Schmersal offers command devices, such as foot switches and pull-wire switches as well as signalling devices.



Emergency-Stop push buttons



Foot switches



Heavy-duty version - Series R



Hygiene-conform command and signalling devices



Pull-wire switches



Design program

# Ex-switchgears zone 2 and zone 22

## For explosive-endangered areas

The Schmersal Group offers a large program of switchgear for explosive-endangered environments in accordance with the Directive 94/9/CE

These switches are used wherever the risk of dust or gas explosions is present, for instance in chemical plants, facilities processing organic powder substances and metal machining, where inflammable aluminium dust is emitted.



Ex solenoid interlocks



Ex position switches with safety function



Ex position switches with safety function



Ex safety sensors



Ex safety switches with separate actuator

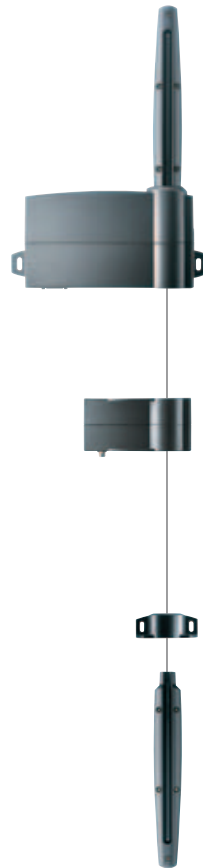


Ex solenoid interlocks

# Lift switchgears

For more than fifty years, Schmersal produces switchgears for the “safest transportation means of the world“. Apart from classic switchgears such as door contacts, door interlocks and position switches.

Schmersal also offers brand new technologies for this highly competitive market with particular advantages for the designers, such as the USP elevator positioning system working according to a new principle, which is worldwide successfully used.



Elevator positioning system USP



Emergency call system



Magnetic reed switches



Door contacts



Floor and fine adjustment switches



Door locking devices

You will also find detailed information regarding our product variety on our website: [www.schmersal.com](http://www.schmersal.com).

Of course you can call us or one of our representatives on the following pages:  
Phone +49 (0) 202 6474 - 0



### Online catalogue

Designers and purchasers of companies which cooperate with the Schmersal Group do not need to store extensive data and update them: You can find all required information and data daily updated in the online **catalogue** at [www.produkte.schmersal.de](http://www.produkte.schmersal.de).



### Online documentation in six languages

The online offer for customers is continuously extended. It can be taken for granted that the continuously - Catalogue, which comprises round 1000 pages as printed version, is online available in six languages. But not only the technical data of the complete product portfolio are available in such a way. Also the declarations of conformity, the test certificates as well as the mounting and wiring instructions can be viewed or downloaded.



### Service for designers

The technical drawings of the products are also included in the online catalogue, as a special service to designers. In this way, they can download the required drawings and import them directly into their CAD-systems. The CAE data enabling a comfortable planning of electrical projects are available for download on the Internet as well. The Schmersal homepage furthermore contains up-to-date information with regard to general subjects, technical articles on machine safety as well as news regarding events and trainings. Just check it out!

# Media



## Main catalogue

- Safety technology
- Automation Technology
- Lift switchgear



## Subject brochures

For some product groups, the Schmersal Group has published informative brochures containing a presentation of the product programme, general and practice-oriented hints for mechanical and safety engineers and standard-compliant wiring examples.



## Examples:

- Electronic safety sensors and solenoid interlocks
- Safety sensors
- Solenoid interlocks
- PROTECT PSC safety controllers
- AS-Interface Safety at Work
- Ex switchgear
- Command and signalling devices  
Heavy-Duty-series D-22R
- PROTECT SRB safety relay modules



## MRL News

Since 1996, the "MRL News" appears at irregular intervals; this information series is intended to provide information and news regarding the complex theme of "Standards and Directives regarding the Safety of Machinery and Machine Controls." The articles in the MRL News inform the mechanical engineer, amongst other things, about standards, which are currently in the draft phase.



## tec.nicum

The new training centre "Schmersal tec.nicum" is the logical result of our efficiency- and customer-orientated company policy. We want to share our specific knowhow and experience of many years with our customers, especially in the field of functional machine safety. In this brochure, you will find a series of professional seminars, which will take place at the Wuppertal training centre. We are looking forward to meet you there!