Safety in System
Protection for man and machine

# **INNOVATIONS** 2024/2025









### **TURNING WORKPLACES INTO SAFER PLACES.**

The requirements for modern machines and systems are constantly increasing. Efficiency, flexibility and the highest safety standards are essential today in order to remain successful in global competition.

As a leading manufacturer of safety switchgear devices, we rely on innovative technologies that not only provide the best possible protection for your machine operators, but also sustainably increase productivity.

In this brochure we present our latest product developments, specifically designed to improve the efficiency, flexibility and safety of your machines. With forward-looking technologies such as advanced diagnostics and networked systems, our solutions contribute to greater productivity and smoother operations. The focus is not only on Industry 4.0 requirements, but also on industry-specific features such as hygienic design or explosion protection.

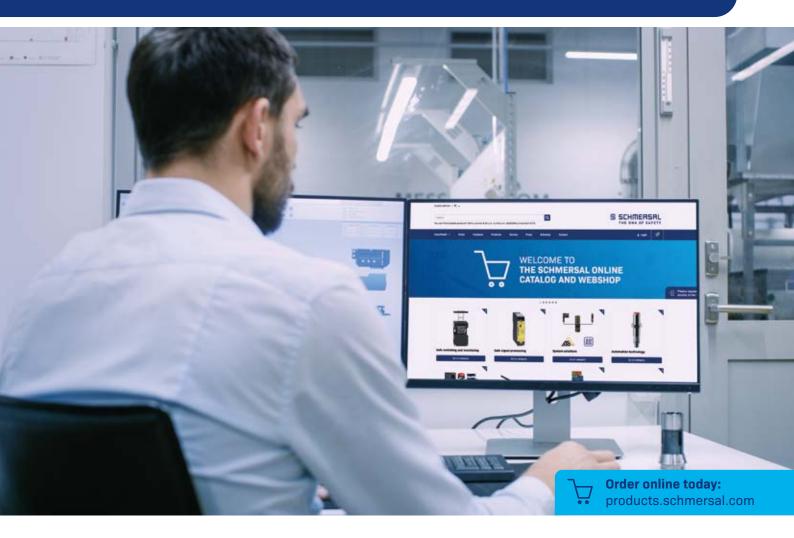
In addition, we are expanding our international network of experienced safety consultants in order to be able to offer you customised services for all aspects of machine safety. Our goal is to provide you with the support you need so that you can concentrate fully on your core business.

Get in touch with us directly – we will be happy to advise you!

**Heinz Schmersal** and **Philip Schmersal** 

**Managing Directors** 

# **SCHMERSAL WEBSHOP** 24/7. SIMPLE. SAFE.



### **SCHMERSAL WEBSHOP**



CONVENIENT



**OPTIMISED** 



**INFORMATIVE** 



**EFFICIENT** 

The Schmersal webshop gives you access to around 8,000 safety and automation products, from simple electromechanical safety switches to programmable safety control systems and software.

Each product is accompanied by up-to-date and comprehensive product information that can be retrieved at any time.

Operating instructions, EU declarations of conformity and certificates for components are available for download, together with additional documents. If a user has specific questions about a product or its use, he or she can make use of the live chat function to discuss with a skilled member of Schmersal's sales team during business hours.

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# SAFETY LIGHT CURTAINS / SAFETY LIGHT GRIDS SLC/SLG440COM WITH A WIDE RANGE

### SAFETY LIGHT CURTAIN SLC440COM...H



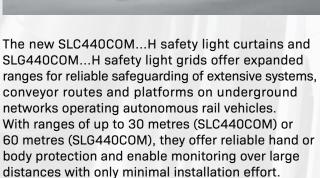
### SAFETY LIGHT GRID SLG440COM...H



- Hand protection with a range up to 30 m
- Resolution 30 mm
- Protection field 330 to 1,930 mm
- Active integrated set-up tool
- Status and diagnostics via Schmersal 'SLC Assist' app via Bluetooth® LE interface

- Body protection with a range up to 60 m
- Resolution 300, 400, 500 mm
- Protection field 500 to 900 mm
- Active integrated set-up tool
- Status and diagnostics via Schmersal 'SLC Assist' app via Bluetooth® LE interface







Using mirrors, entire areas can be safeguarded and monitored with just a single safety light curtain or light grid.

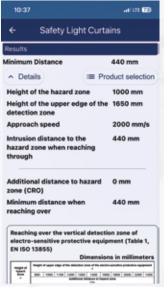
This solution reduces both the installation effort and the acquisition costs. In addition, the safety light curtains and light grids have a Bluetooth® LE interface which can be used in conjunction with the "SLC Assist" app for easy monitoring and diagnosis.

## "SLC ASSIST" APP

### "SLC ASSIST" APP

- New function for determining the safety distance to the hazardous area in accordance with EN ISO 13855
- Product selection according to AOPD functions
- Link to online catalogue







"SLC Assist" for iOS "SLC Assist" for Android





The new version of the Schmersal "SLC Assist" app offers even more functionality. In addition to extensive diagnosis and configuration of your safety light curtain or light grid, you can now also calculate the safety clearance required to the hazard spot. With the intuitive user interface, you can effortlessly capture all essential data and see not only the calculated results, but specific

products to match the situation from Schmersal's range. One click takes you directly to the corresponding product in the Schmersal online catalogue.

The SCHMERSAL App "SLC Assist" is available for Android and iOS devices.

# **DOOR HANDLE SYSTEM DHS-U1**NEW STANDARDS IN ERGONOMICS, FUNCTIONALITY AND DESIGN

### **DOOR HANDLE SYSTEM DHS-U1**

- Optimised for the AZM40 solenoid interlock and the RSS260 safety sensor
- Machine status directly recognisable on the handle
- Ergonomic door handle for left or right hinged safety guard
- Degree of protectionIP66, IP67 (with push button)IP66, IP67, IP69 (without push button)





The innovative DHS-U1 door handle system combines the functions of a robust door handle with the signalling of various machine statuses via large-scale illumination of the handle. The RGB technology used makes it possible to illuminate the handle in 7 different colours. The colours can be individually controlled by the customer so that the respective machine status can be seen directly on the handle.

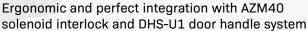
An additional push button is available as an option. This one can, for example, fulfil the tasks of a reset function or a request to open the safety guard. The supplied coloured push button cover caps allow the push button to be adapted to customer requirements. In addition to the version with illuminated handle with illuminated push button, versions with illuminated handle without push button, without illuminated handle with push button and a version without electrical connection are also available.

# CONTROL PANEL BDF40 INTUITIVE CONTROL, ELEGANT DESIGN

### **CONTROL PANEL BDF40**

- Slimline design to match the AZM40 solenoid interlock and the DHS-U1 door handle system
- Flexibility thanks to mountable push button cover caps in 12 colours
- Generous open spaces for easy labelling
- Quick and fail-safe installation thanks to M12 connector
- Cover caps available for connector-free appearance







The new BDF40 control panel is characterised by its modern and slim design. It is available in two versions, with or without EMERGENCY STOP function, and offers a choice of exchangeable, coloured push button cover caps for push buttons or illuminated push buttons. The control panel can be perfectly integrated into a door system with the AZM40 solenoid interlock and the DHS-U1 door handle with a connecting cover. The 12-pin M12 connector allows quick and fail-safe installation.

### **SOLENOID INTERLOCK AZM40** SMALLEST ELECTRONIC SOLENOID INTERLOCK IN THE WORLD.

### **SOLENOID INTERLOCK** AZM40

- NEW New degree of protection up to IP69
- NEW
- Enhanced temperature range -20 °C to +55 °C
- NEW
- New variants with emergency exit or emergency release
- Bistable working principle
- High holding force F<sub>zh</sub> = 2,000 N
- Suitable for applications up to Cat. 4 / PL e / SIL 3





Lever or push button for emergency exit or emergency release



Lockout tag for fixing up to six padlocks



Mounting plates for different profile systems

### **SOLENOID INTERLOCK AZM150** SLIMLINE DESIGN - HIGH CODING LEVEL

### **SOLENOID INTERLOCK AZM150**



**NEW** ■ Push button for emergency exit or emergency release



■ Bowden cable for remote release

- Actuating head can be repositioned by 4x 90°
- Holding force F<sub>zh</sub> = 1,500 N
- Variants with 8-pin M12 connector plug, compatible connection to Safety-Field-Box

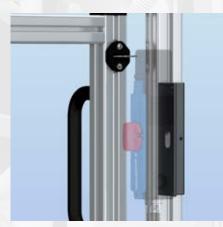




Bowden cable for remote release



Connector plug M12, 8-pole, optionally left, right or bottom



Straight and angled mounting plates for easy mounting on profile systems

## SAFETY SWITCHES AZ215/AZ216 AND AZ315/AZ316 COMPACT AND FLEXIBLE

### SAFETY SWITCHES AZ215 / AZ216, AZ315 / AZ316

- Actuating head can be repositioned by 4x 90°
- Latching force 12 N or 30 N
- Flexible connection types and positions
- Two or three switching contacts
- Variants with 8-pin M12 connector plug, compatible connection to Safety-Field-Box



**AZ215**Metal enclosure,
Design to EN 50047



**AZ216**Thermoplastic enclosure,
Design to EN 50047



AZ315 Metal enclosure, Design to EN 50041



**AZ316**Thermoplastic enclosure,
Design to EN 50041

The new safety switches of the AZ family are used for monitoring sliding or hinged guards. The die-cast zinc actuating head can be easily rotated in 90° steps before mounting. This makes it possible to approach the head laterally from four different directions as well as from above. Depending on the requirements, variants with a latching force of 12 N or 30 N are available.

In addition to the variant with M20 cable entry and connection terminals, variants with a 4- or 8-pin M12 connector are available depending on the number of contacts. Device variants with three contacts in a wide variety of combinations can also fulfil a signalling function in addition to the safety function. The 45° turned connection terminals of the switching elements enable quick and easy wiring.





Simple rotation of the actuating head



Quick installation as connection terminals rotated by 45°



Various actuators for hinged or sliding doors

### SAFETY-FIELD-BOX SFB COST-OPTIMISED, DECENTRALISED INSTALLATION SOLUTION

### SAFETY-FIELD-BOX SFB



**NEW NOW AVAILABLE IN 3 FIELDBUS VARIANTS** 

SFB-PN-IRT-8M12-IOP-V2





SFB-EIP-8M12-IOP





SFB-EC-8M12-IOP





- 8 universal 8-pin M12 device ports
- Connection of electronic and electro-mechanical switchgear devices
- 4 control panels (with EMERGENCY STOP) connectable
- 1-channel and 2-channel control of the interlocking function
- Automatic resettable fuse integrated
- M12 power connector with a current carrying capacity of 10 A
- Robust industrial design



Thanks to the Safety-Field-Box, a wide variety of safety switchgear can be connected decentrally in the field and freely linked in the safety controller. Straightforward connection with M12 connectors allows for quick and fail-safe installation.

The power supply to the fieldbox is provided via M12 power connectors with a current capacity of 10 A. Due to the cable cross-section of 3 mm<sup>2</sup>, the installation of the fieldboxes in series connection with only one central supply is possible.

#### **Device ports** 8 connector M12, 8-pole

#### **LED diagnostic**

Extended status indication of the safety switchgear

#### Communication

PROFINET/PROFIsafe (PN) EtherNet/IP/CIP-Safety (EIP) EtherCAT/FSoE (EC)

#### **Power supply**

M12 power connection with 10 A

#### Signal assignment

- 2x F-DI: 2-channel safety input
- 1x F-DQ: Safety output, internal, 2-channel
- 1x DI: Digital input for diagnostic signal
- 2x DQ test pulse: 2 test pulse outputs for NC contacts
- 24V and GND: Power supply of the connected safety switchgear

#### **LED diagnostic**

Extended status indication of the Safety-Field-Box

### **UNIQUE OPPORTUNITIES**

In addition to electronic and electromechanical safety sensors and switches, light grids, light curtains and light barriers can also be connected to a single device connection via Y-adapters. A particular highlight of the Schmersal SFB is the ability to connect up to 8 solenoid interlocks with 1-channel or 2-channel actuation of the guard locking function.

The option to connect up to 4 control panels with EMERGENCY-STOP button and up to 3 non-safe command and signalling devices is unique.



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# FIELDBUS GATEWAY FOR DEVICES WITH SERIAL DIAGNOSIS SDG

### FIELDBUS GATEWAY SDG FOR SERIAL DIAGNOSIS

- Serial diagnosis of up to 31 safety relays via Schmersal SD bus
- Automatic addressing of the connected SD bus participants
- Diagnostic and configuration interface for easy commissioning and maintenance of the system
- Extensive additional functions via integrated web server
- Long-term storage of log messages via SD card
- Conversion of status and diagnostic data to Profinet- or Ethernet-based fieldbus protocols







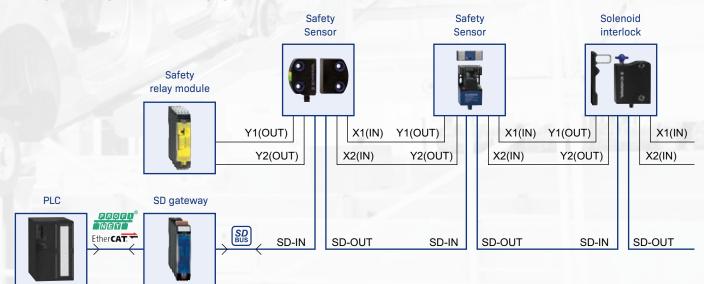


under preparation



EtheriNet/IP

### INSTALLATION VARIANT WITH SD GATEWAY AND SEPARATE SAFETY RELAY MODULE



## **SAFETY SENSOR** BNS40S-...-T



### SAFETY SENSOR BNS40S-...-T

NEW

- Enhanced temperature range up to 100 °C
- Suitable for the food processing industry
- Stainless steel enclosure
- Concealed mounting possible
- Insensitive to transverse misalignment

The new variant of the BNS40S-T magnetic safety sensor enables use at ambient temperatures up to 100 °C. In combination with the stainless steel housing and the contactless, electromagnetic mode of operation, the sensor is particularly suitable for use in hygiene-sensitive applications such as food processing.

The stainless steel housing not only ensures high corrosion and wear resistance, but also enables easy cleaning. Despite their compact design, the BNS sensors achieve high switching distances. Concealed mounting is also possible, as the sensor technology works through plastic and even stainless steel covers.

# **POSITION DETECTION AND MONITORING**INDUCTIVE PROXIMITY SWITCHES

# INDUCTIVE PROXIMITY SWITCHES IFL NEW GENERATION

- Complete product family: M8, M12, M18 and M30
- Metal enclosure (M8 variant made of stainless steel)
- Temperature range -25 °C up to +70 °C (M8 for up to +80 °C)
- With diagnosis LED to indicate short-circuit or overload



The IFL inductive proximity switch from Schmersal is the standard solution for non-contact detection of metallic objects for position detection and monitoring in industrial applications.

The new proximity switches offer maximum flexibility thanks to a 4-wire solution with antivalent output function with NC and NO contacts. The integrated LED indicator lights up not only when objects are detected, but also

has a diagnosis function to quickly and reliably indicate short-circuits and overloads. This helps to boost operational safety and makes for easier fault diagnosis in ongoing operation. The UL approval complements the new IFL generation profile and opens up new additional opportunities on the global market.

# PULL-WIRE EMERGENCY-STOP SWITCH ZQ901 PULL-WIRE EMERGENCY STOP SWITCHES WITH STAINLESS STEEL ENCLOSURE

# PULL-WIRE EMERGENCY-STOP SWITCH ZQ901

- Robust stainless steel housing
- Lengths of wire up to 75 m
- Wire pull detection with wire breakage detection
- Reset push button
- Twisting of towing eye not possible



The new ZQ901 pull-wire emergency stop switch is characterised by its robust stainless steel enclosure. The stainless steel enclosure offers optimal mechanical and chemical protection in harsh environments and provides the ideal solution for a wide range of applications in new areas. Thanks to the new housing material, the ZQ901 can be used on transport and material handling systems as well as systems in the food processing and chemicals industries.

The tried-and-tested technology, used in industrial settings, meets the highest availability standards.

The ZQ901 offers an emergency-stop function with latching mechanism and manual reset as well as wire break detection for wire lengths up to 75 metres. In conjunction with an appropriate safety-monitoring module, the pull-wire emergency stop switch can be used up to PL e in accordance with EN ISO 13849-1.

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### **TIME OF FLIGHT CAMERA AM-T100**

# MILLIMETRE-PRECISE 3D DEPTH IMAGES IN INDUSTRIAL MANUFACTURING PROCESSES, LOGISTICS AND ROBOTICS



Original size

# TIME OF FLIGHT CAMERA AM-T100

- Sony DepthSense™ technology for millimetre-precise 3D depth images
- High frame rate of up to 60 fps
- 67° × 51° field of view with a range of up to 6 m\*
- Optimally adaptable to different ambient and mounting conditions
- \* Depending on the remission properties of the target objects, a range of up to 30 m can be achieved.

### **APPLICATIONS**

- Monitoring of 3-dimensional areas with the CONSAM-T software
- ROI (Region-of-Interest) application for dynamic presence control
- Standardised data interface for creation of individual applications

The AM-T100 is a time-of-flight (ToF) camera that uses a Sony DepthSense™ sensor to produce millimetre-precise 3D depth images. The high frame rate of up to 60 fps enables efficient use in industrial manufacturing processes, logistics and robotics.

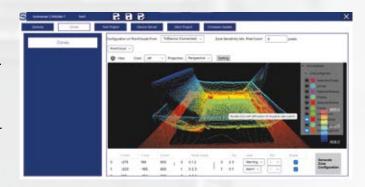
With powerful IR illumination and  $640 \times 480$  pixel image resolution, the AM-T100 achieves a  $67^{\circ} \times 51^{\circ}$  field of view with a range of up to  $6 \text{ m}^{*}$ .

High-performance algorithms enable pre-filtering of the data so that the camera can be optimally adapted to different ambient conditions. The AM-T100 is a GigE vision camera that makes its image data available to common image processing software via the standardised data interface GenlCam. In addition, Schmersal also offers standard applications that can be installed as scripts on the camera and support the customisation of applications.

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## MONITORING OF 3-DIMENSIONAL AREAS CONSAM-T

The configuration software CONSAM-T is pre-installed on the AM-T100. With the help of this software, the camera can be configured to monitor complex 3D zones. If objects enter these zones, digital outputs are switched. In addition, digital inputs can be used to switch back and forth between different 3D zones so that even demanding sequences and processes can be monitored.



# DYNAMIC PRESENCE CONTROL IN THE "REGION OF INTEREST" (ROI)

The ROI application can check the presence or absence of objects at a specific location and determine average distance values. The results can then be used for different operational steps in processes, such as sorting out components, stopping the machine or storing data for statistical purposes.



Occupancy notification for robots

### **DATA INTERFACE FOR INDIVIDUAL APPLICATIONS**

The camera's 3D data can be used to create customised applications with Machine Vision Software from different developers, including HALCON.

In that case, the data are evaluated on an external computer, which forwards the results to a control system.



Fast detection of the filling level

# SOLENOID INTERLOCK EX-AZM300 VERSIONS FOR EXPLOSION PROTECTION







# SOLENOID INTERLOCK EX-AZM300

- Zone 2 and 21 (gas and dust atmospheres)
- Ex ec (gas) increased safety
- Ex tc (dust) protection by enclosure
- Includes protective enclosure
- Suitable for applications up to Cat. 4 / PL e / SIL 3
- Manual release



Ex ec (gas Increased safety

Ex tc (dust)
Protection
by enclosure

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# **SOLENOID INTERLOCK EX-AZM150**VERSIONS FOR EXPLOSION PROTECTION

# SOLENOID INTERLOCK EX-AZM150

- Zone 2 and 22 (gas and dust atmospheres)
- Ex nR (gas) restrictive breathing enclosure
- Ex tc (dust) protection by enclosure
- Actuating head can be repositioned by 4x 90°
- Holding force F<sub>zh</sub> = 1,500 N
- Latching force 50 N
- Suitable for applications up to cat. 3/PL d

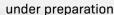
















Ex tc (dust)
Protection
by enclosure

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NE 2 / 22 ZONE 1 / 21

# **HEAVY DUTY SWITCHES HDS**VERSIONS FOR EXPLOSION PROTECTION













# PULL-WIRE EMERGENCY STOP SWITCH EX-RS655

- Zone 1 and 21 (gas and dust atmospheres)
- Ex db eb (gas) pressure-resistant enclosure
- Ex tb (dust) protection by enclosure
- The emergency stop function can be triggered at any point on the wire
- The maximum length of wire of 2x 100 m reduces the number of switches required, thereby saving costs
- Suitable for applications up to PL e

Ex tb (dust)
Protection
by enclosure



Ex db eb (gas)
Pressure-resistant
enclosure

### **POSITION SWITCH EX-BS655**









- Zone 1 and 21 (gas and dust atmospheres)
- Ex db eb (gas) pressure-resistant enclosure
- Ex tb (dust) protection by enclosure
- Basic switch can be combined with different actuators for position, belt misalignment or level switches
- All variants can be used as a safety switch
- Suitable for applications up to PL d







Ex tb (dust) **Protection** by enclosure

Ex db eb (gas) Pressure-resistant enclosure

**ZONE 1 / 21** 

**ZONE 0 / 20** 

# COMMAND DEVICES, INDICATOR LIGHTS AND EMERGENCY STOP COMMAND DEVICE VERSIONS FOR EXPLOSION PROTECTION









### COMMAND DEVICES, INDICATOR LIGHT EX-R-3127 AND EMERGENCY STOP COMMAND DEVICE EX-RDRZ45RT-3127

- Zone 1 and 21 (gas and dust atmospheres)
- Ex db eb (gas) flameproof enclosure, increased safety
- Ex tb (dust) protection by enclosure
- With EX-C contact elements
- Mounting hole (diameter): 22.3 mm
- Degree of protection IP65
- Can be used without an intrinsically safe barrier

Ex tb (dust)
Protection
by enclosure

Ex db eb (gas)
Flameproof enclosure,
increased safety

# **ASSEMBLY HOUSING EX-RCB**VERSIONS FOR EXPLOSION PROTECTION

# ASSEMBLY HOUSING EX-RCB

- Zone 1 and 21 (gas and dust atmospheres)
- Ex eb (gas) increased safety
- Ex tb (dust) protection by enclosure
- Enclosure sizes for 1, 3 and 5 control units
- IP65, in combination with the EX-R programme
- Stainless steel enclosure
- Fastening from the back or with straps











Ex eb (gas) Increased safety

Ex tb (dust)
Protection
by enclosure







### excellence in safety

tec.nicum is the Schmersal Group's business unit for solutions and services related to machine, plant and occupational safety.

Schmersal restructured its service business in 2024. The range of safety services offered by tec.nicum has been significantly expanded – particularly with regard to digitalisation and complete solutions for machine safety – and the global activities and expertise have been more closely integrated.

In April 2024, Schmersal founded tec.nicum – Solutions & Services GmbH as a new subsidiary, which also incorporated omnicon engineering GmbH, which Schmersal had already acquired in 2019. The headquarters of the new subsidiary is located in Kirkel-Limbach, Germany.

The four pillars on which tec.nicum's offering has been built to date – academy, consulting, engineering and integration – have been supplemented by two more: digitalisation and outsourcing.

digitalisation: tec.nicum is increasingly offering newly developed software solutions, such as a new tool for carrying out risk assessments, as well as new digital technologies such as cloud solutions, IIoT applications, digitalised lockout-tagout procedures and energy management tools.

**outsourcing:** tec.nicum offers companies the opportunity to completely outsource all tasks related to machine safety, from the planning and installation of control cabinets to the design of holistic safety solutions. tec.nicum provides the user with ready-to-connect plug & play solutions.

Thanks to its worldwide consultancy network, tec.nicum services are available around the globe. tec.nicum provides customers with competent, product- and manufacturer-neutral advice and supports them in the safety-related design of their machines and production lines.

### tec.nicum Schmersal Group

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#### academy

#### **Education center**

- Training courses
- Customer-specific trainings
- In-house seminars
- Certified courses (mce.expert and FSE)



#### consulting

#### **Analysis and documentation**

- Technical support
- Risk assessment
- CE conformity assessment
- Evaluation of machines and production lines
- Reports

### engineering

#### Planning and design

- Technical project planning
- Conceptual project development
- Electrical and mechanical design
- Executive project management



### integration

#### **Practical application**

- Turnkey approach
- Installation
- Retrofit



### digitalisation

#### **Software integration**

- tec.ps (Product Service System)
- tec.ssm (Schmersal Smart Machine)
- tec.cvs (Al and Computational Vision Solutions)
- tec.dloto (Digital Lockout Tagout)
- tec.ems (Energy Monitoring System)

#### outsourcing

#### **Serial solutions**

- Plug & Play products
- Engineer to Order projects
- Systems and cabinets



## tec\_nicum

The range of services offered by tec.nicum comprises six segments: academy (knowledge transfer), consulting (advisory services), engineering (technical planning), integration (execution and implementation), digitalisation (software solutions and new digital technologies) as well as outsourcing (complete solutions).

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# THE SCHMERSAL GROUP PROTECTION FOR MAN AND MACHINE

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 2,000 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" in mechanical engineering and plant manufacturing and operators of machinery. They benefit from the company's extensive expertise as a provider of systems and solutions for machine safety. In addition, Schmersal specialises in various areas including intralogistics, 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 design 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
- tec.nicum digitalisation Software solutions and new digital technologies
- tec.nicum oursourcing Complete solutions





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