

MACHINE GUARDING SAFETY PRODUCTS

- Safety Interlock Switches
- Non-Contact Safety Sensors
- Emergency Cable-Pull Switches
- Safety Controllers
- Safety Light Curtains
- Hinged Safety Interlocks
- Safety Edges/Bumpers
- Safety-Rated Limit Switches
- Safety Foot Switches
- Safety Pressure Mats
- Programmable Safety Controller
- Safe Speed Monitors
- Electronic Safety Sensors
- Serial Diagnostic Gateways



SCHMERSAL

Safe solutions for your industry

MACHINE SAFEGUARDING SOLUTIONS FOR YOUR INDUSTRY



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1 KEYED INTERLOCK SWITCHES



| SELECTION GUIDE | | | |
|-------------------------------|--------------------------------------|----------------------|--|
| Switch Series | Housing Material | Envelope Dimensions | Contact Configurations |
| AZ17 AZ17zi | Glass-fiber reinforced thermoplastic | 1.25" x 1.25" x 2.5" | 1 NO & 1 NC 2 NC |
| AZ15/16 AZ16zi | Glass-fiber reinforced thermoplastic | 1.25" x 2" x 3" | 1 NC 1 NO & 1 NC 2 NC 1 NO & 2 NC 3 NC |
| TZG | Glass-fiber reinforced thermoplastic | 1.75" x 2" x 3.75" | 1 NO & 1 NC 2 NC |
| SDG | Die-cast aluminum | 1.75" x 2" x 6" | 1 NO & 2 NC 2 NO & 1 NC 3 NC |
| AZ3350 | Die-cast aluminum | 1.5" x 1.75" x 4.5" | 1 NO & 2 NC 3 NC |
| SHGV (Key Transfer System) | Die-cast aluminum | 1.75" x 1.75" x 4" | 1 NO & 1 NC |
| AZ415 | Die-cast aluminum | 1.75" x 3.5" x 4" | 2 NO & 2 NC |

2 KEYED INTERLOCK SWITCHES WITH SOLENOID LATCHING



| SELECTION GUIDE | | | |
|-----------------|--------------------------------------|-----------------------|----------------------------|
| Switch Series | Housing Material | Envelope Dimensions | Contact Configurations |
| AZM170 | Glass-fiber reinforced thermoplastic | 1.25" x 2.5" x 5" | 1 NO & 1 NC 2 NC* |
| AZM161 | Glass-fiber reinforced thermoplastic | 1.25" x 3.5" x 5.125" | 2 NO & 4 NC |
| TZF/TZM | Glass-fiber reinforced thermoplastic | 1.5" x 4" x 5" | 2 NO & 1 NC* |
| TKF/TKM | Die-cast aluminum | 2.5" x 3.5" x 8" | 2 NO & 2 NC |
| TZKF/ TZKM | Glass-fiber reinforced thermoplastic | 1.75" x 2" x 7" | 1 NO & 2 NC* |
| AZM415 | Die-cast aluminum | 2" x 5" x 5.5" | 2 NO & 2 NC 3 NO & 3 NC |

*Other contact versions available. Please consult factory for additional information.

3 APPLICATION ACCESSORIES



STS with TFA/TFI



B25



BDF



ZSD



TFH



SEPK(G)

SELECTION GUIDE

STS Safety Handle Assembly with Emergency Release Option

For AZ16, AZ3350, AZ415, AZM161 & AZM415 Interlock Switches

B25 Safety Door Handle

For AZ17 & AZM170 Interlock Switches

ZSD 3-Position Hand-held Enabling Device

Provides machine stop control

TFH Safety Foot Control

3-stage operation to stop hazardous movements whether released or fully depressed in an emergency situation

SEPK(G) Two-Hand Control Consoles

Lexan or die-cast housing, integrated e-stop mushroom pushbutton, light-force mushroom pushbutton actuators requiring simultaneous operation

BDF Control Stations

An IP65 Rated enclosure with positions for up to 4 control elements: E-Stop button, illuminated and non-illuminated pushbuttons, selector switches, keyed selector switches, or LED indicator lights.

TFA/TFI Guard Alignment Aid

Self centering guide helps align guard and provides end stop. For inside or outside mounting.

CSA-M-1 Magnetic Latch

Magnetic force helps keep guard door closed and provides end stop.

4 SPEED CONTROL



FWS



DNDS

SELECTION GUIDE

| Switch Series | Operating Voltage | Types of inputs monitored | Type of speed control | No. of enabling circuits | No of Aux. outputs |
|---------------|---------------------------|---|--|--------------------------|--------------------|
| AZS 2305 | 24VDC 110VAC 230VAC | Time | Timer | 3 | 2 PNP |
| FWS 1205 | 24VDC | 2 impulse sensors | Standstill | 2 | 2 PNP |
| FWS 2505 | 24-230 VAC/DC | 2 impulse sensors | Standstill | 4 | 1 NC 2 PNP |
| DN3PS2 | 24V DC | Back EMF (up to 690V AC) | Sensor-less standstill | 2 | None |
| DNDS | 24VDC | Encoder Resolver Proximity switches | Upper/lower Standstill Safe Motion | Various | Various |

5 EMERGENCY CABLE-PULL SWITCHES



| SELECTION GUIDE | | | | |
|-----------------|---------------------------------------|---------------------------|---|-----------------|
| Switch Series | Housing Material | Max. Span | Contact Configurations | Integral E-Stop |
| ZQ700 | Glass-fiber reinforced thermo-plastic | 32.5 feet | 1 NO & 1 NC 2 NC | No |
| ZQ900 | Die-cast zinc | 165 feet | 1 NO & 1 NC 2 NC 2 NO & 2 NC 1 NO & 3 NC 4 NC | Available |
| T3Z 068 | Die-cast iron | 165 feet (Each Direction) | 1 NO & 1 NC 2 NO & 2 NC 3 NO & 3 NC | No |
| EX-ZQ900 | Die-cast Zinc | 165 feet | 1 NO & 1 NC 2 NC 2 NO & 2 NC 1 NO & 3 NC 4 NC | No |

Cable and Accessories available, including S900 Tensioner.

6 NON-CONTACT SAFETY SENSORS



| SELECTION GUIDE | | | |
|-----------------|---------------------------------|-------------------|--|
| Switch Series | Approximate Envelope Dimensions | Operating Voltage | Contact Configurations |
| BNS260 | 1.0" x 1.4" x 0.5" | 24 VDC | 1 NO & 1 NC, 2 NC 1 NO & 2 NC, 3 NC |
| BNS36 | 3.5" x 1.0" x 0.5" | 24 VDC | 1 NO & 1 NC, 2 NC 1 NO & 2 NC, 3 NC |
| BNS303 | 1.18" Dia x 1.74" | 100 VAC/DC | 1 NO & 1 NC 1 NO & 2 NC |
| BNS30 & BNS300 | 1.18" Dia x 3.07" | 24VDC | 1 NC |
| BNS333 | 4.5" x 1.7" x 1.7" | 24VDC | 1 NC |
| BNS16 | 1.25" x 2" x 3" | 100 VAC/DC | 1 NO & 2 NC |
| BNS40S | 0.5" x 1.0" x 3.5" | 24 VAC/DC | 1 NO & 2 NC |
| BNS-B20 | N/A | 24 VDC | 1 NO & 1 NC |

7 PULSE-ECHO & RFID TECHNOLOGY ...NON-CONTACT SAFETY SENSORS



| SELECTION GUIDE | | | |
|---------------------------|---|------------------------------|------------------------------|
| Switch Series | Type | Envelope Dimensions | Output Configurations |
| CSS 180 | Cylindrical Safety Sensor | 0.7"Dia. x 3.6" | 2 PNP Safety 1 Diagnostic |
| CSS 30S | Stainless Steel Cylindrical Safety Sensor | 1.18"Dia. x 3.5" | 2 PNP Safety 1 Diagnostic |
| CSS 34 | Rectangular Safety Sensor | 1" x 4" x 1" | 2 PNP Safety 1 Diagnostic |
| CSS 16 | Safety Sensor in AZ16 Housing | 1.25" x 2" x 3" | 2 PNP Safety 1 Diagnostic |
| RSS36 | Rectangular RFID Sensor | 1" x 1" x 4.2" | 2 PNP Safety 1 Diagnostic |
| SD Gateways for Field Bus | | Serial Diagnostic Converters | |

...ELECTRONIC SAFETY SWITCHES WITH OR WITHOUT LOCKING



| SELECTION GUIDE | | | |
|-----------------|-----------------------------|-----------------------|-----------------------------------|
| Switch Series | Type | Envelope Dimensions | Output Configurations |
| AZ 200 | Interlock | 1.57" x 1.96" x 8.66" | 2 PNP Safety 1 or 3 Diagnostic |
| AZM 200 | Solenoid Interlock | 1.57" x 1.96" x 8.66" | 2 PNP Safety 1 Diagnostic |
| MZM 100 | Magnetic-Latching Interlock | 1.75" x 7.25" x 1.75" | 2 PNP Safety 1 Diagnostic |
| AZM300 | Solenoid Interlock (RFID) | 4" x 3.4" x 1.33" | 2 PNP Safety 1 Diagnostic |

8 HINGED SAFETY INTERLOCK SWITCHES



T.235



TESZ



TVS335



TESF

| SELECTION GUIDE | | | |
|-----------------|--------------------------------------|--|-----------------------------|
| Switch Series | Housing Material | Angular Displacement for Contact Opening | Contact Configurations |
| TESF | Die-cast zinc | 3° Fixed or Adjustable | 1 NO & 2 NC 2 NO & 2 NC |
| TESZ | Glass-fiber reinforced thermoplastic | 4.5° | 1 NO & 2 NC 3 NC |
| TVS335 | Die-cast aluminum, enamel finish | 2° | 1 NO & 1 NC 2 NC |
| T.C 235 | Die-cast zinc, enamel finish | 4.5° | 1 NO & 1 NC 2 NC 1 NC |
| T.C 236 | Glass-fiber reinforced thermoplastic | 4.5° | 1 NO & 1 NC 2 NC 1 NC |

9 SAFETY-RATED LIMIT SWITCHES



Z/T 235



Z/T 236



Z/T 335



ZSM476



T/M 250*



T/M 441*

| SELECTION GUIDE | | | | |
|-----------------|--------------------------------------|----------------------|----------------------|--|
| Switch Series | Housing Material | Housing Dimensions | Degree of Protection | Contact Configurations |
| Z/T235 | Die-cast zinc | 1.25" x 1.25" x 2.5" | IP67 | 1 NO & 1 NC 2 NO 2 NC |
| Z/T236 | Glass-fiber reinforced thermoplastic | 1.25" x 1.25" x 2.5" | IP67 | 1 NO & 1 NC 2 NO 2 NC |
| Z/T335 | Die-cast aluminum | 1.5" x 1.25" x 3" | IP67 | 1 NO & 1 NC 2 NO 2 NC |
| Z/T336 | Glass-fiber reinforced thermoplastic | 1.5" x 1.5" x 3" | IP67 | 1 NO & 1 NC 2 NO 2 NC |
| ZSM476 | Glass-fiber reinforced thermoplastic | 1.4" x 1.2" x 4" | IP67 | 1 NC 1 NO 1 NO & 1 NC 3 NC 1 NO & 2 NC |

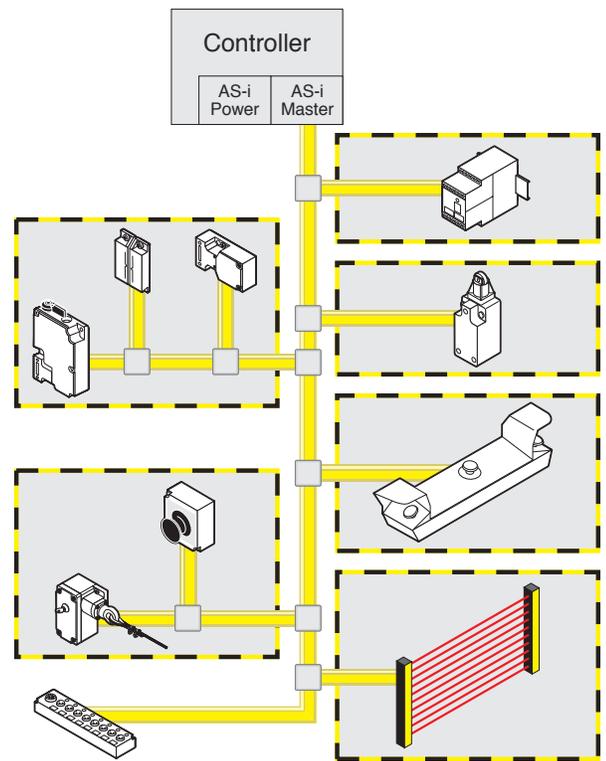
*Heavy-duty limit switches available. Please consult factory.

10 ASi TECHNOLOGY

SCHMERSAL offers a diverse family of AS-Interface Safety at Work (SaW) enabled safety components. Emergency-stop command devices, safety switches, solenoid interlocks or safety light curtains are simply connected to the yellow AS-Interface (ASi) cable. A safety monitor is added for the evaluation of the safety system. ASi wiring systems are one of the most flexible networks available, replacing more complex systems and drastically simplifying wiring and diagnostics, while reducing cost and installation time.

ASi Saw system features:

- Up to 31 standard and safety slaves
- No safety PLC necessary
- Maximum response time of 40ms
- Safety-relevant signals can be integrated into plant diagnostics
- Certified up to Control Category 4 according to EN954-1
- Certified up to PLe to EN ISO 13849-1
- Certified up to SIL 3 to IEC 61508

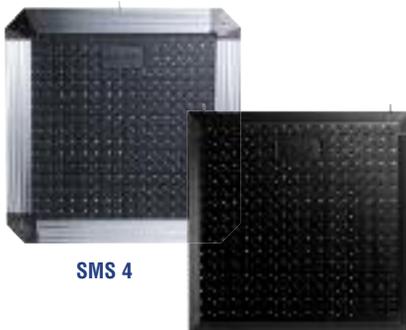


11 FAIL-TO-SAFE SAFETY EDGES



SCHMERSAL's rugged high-tear resistant rubber safety edges are available as sub-components or produced to user specifications. With a choice of aluminum mounting rails, they offer easy installation wherever crushing or shearing points must be safeguarded.

12 SAFETY PRESSURE MATS



SCHMERSAL offers a broad family of standard and custom-made industrial-grade safety pressure mats. Available in 6 standard sizes ranging from 250mm x 500mm to 1000mm x 1500mm and an infinite choice of custom shapes

SMS 4 system available with a choice of 2 different edge finishing profiles.

SMS 5 system manufactured with an integrated trim, eliminating the need for a trim kit package.

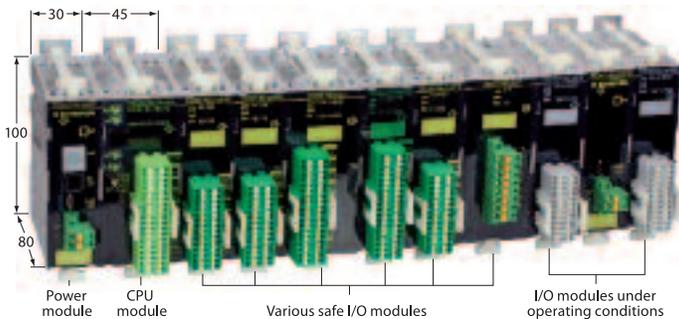
13 OPTO-ELECTRONIC SAFETY DEVICES



SCHMERSAL offers a family of fully CE-compliant “Category 4” Safety Light Curtains. Units are available with 14mm, 30 and 50mm resolution for protection fields of 170mm to 1770mm. Each features an integral safety controller with dual 500mA PNP safety outputs and built-in blanking function as standard features. Units are UL & CSA certified, and IP67 rated. Models are available that provide IP69K protection — making them able to withstand high-temperature and high-pressure washdowns. Additional models are available with an integrated muting function, allowing process materials to pass through the curtain out of the hazardous area while still preventing workers from entering.

In addition SCHMERSAL offers their Series SLB Category 2 and Category 4 single light beams for perimeter guarding. Category 2 units feature a 4m sensing range. Category 4 units feature a 15m sensing range. Each is available with a compatible safety controller and plug-in cables for easy installation.

14 PROTECT – PSC



The Protect PSC is a modular, programmable safety control system designed to accept emergency-stop command devices, safety switches and opto-electronic protective devices. The modular design gives the user the ability to select individual input and output modules to configure a system to meet their individual requirements, with future expansion possible.

Unique to the PSC is the ability to build a complex safety system without programming. This is accomplished using the Mode 1 operating mode, a “hard-wired” version where the system functions result from the arrangement or order of the individual modules at the master/sub-master module. The different system modules provide the user with a fixed number of inputs and outputs. Mode 3 is the free programmable operating mode, where different inputs and outputs of the entire system can be assigned by means of an IEC 61 131-compliant programming language. The smallest system includes 8 inputs and 6 outputs, with over 250 inputs/outputs available when the system is fully extended. The Protect PSC is suitable for Control Category 4 to EN 954-1, PLe to EN13 849-1 or SIL 3 to IEC 61 508.

15 SAFETY CONTROLLERS **Protect** SERIES

For monitoring & control of machine guarding safety systems using:

- Safety Interlock Switches
- Safety Limit Switches
- Safety Light Curtains
- E-Stop Pushbuttons
- Cable-Pull Switches
- Two-Hand Controls



SELECTION GUIDE

| Model | Operating Voltage (U _B) | Types of Inputs Monitored | No. of Input Devices Monitored | No. of Safety Outputs | No. of Auxiliary Outputs | Feedback Monitoring | Type of Reset | Cross-short Monitoring |
|---------------------------|-------------------------------------|----------------------------------|--------------------------------|--------------------------|--------------------------|---------------------|-------------------------------|------------------------|
| SRB 201 ZH | 24V DC | Two-hand control (dry contacts) | 2 | 2 | 1 N.C. | Yes | Automatic | Yes |
| SRB 301 HC/R | 24V AC/DC or 48-230V AC | Two-hand control Safety Mats | 2 | 3 | 1 N.C. | Yes | Monitored-manual | Yes |
| SRB 301 HC/T | 24V AC/DC or 48-230V AC | Safety Mats | 1 | 3 | 1 N.C. | Yes | Monitored-manual or Automatic | Yes |
| SRB 202 MSL | 24V DC | Muting module | 2 | 2 | 2 | Yes | Automatic | Yes |
| SRB 206 ST* | 24V AC/DC or 48-230V AC | Dry contacts | 6 | 2 | 6 PNP | Yes | Monitored-manual or Automatic | No |
| SRB 206 SQ* | 24V AC/DC or 48-230V AC | Dry contacts | 6 | 2 | 6 PNP | Yes | Monitored-manual or Automatic | Yes |
| SRB 211 AN | 24V AC/DC | Dry contacts | 1 | 2 (stop 0) 1 (stop 1) | 1 PNP | Yes | Monitored-manual or Automatic | Yes (selectable) |
| SRB 211 ST | 24V AC/DC | Dry contacts or PNP-type outputs | 1 | 2 (stop 0) 1 (stop 1) | 1 PNP | Yes | Monitored-manual or Automatic | Yes (selectable) |
| SRB 301 LC or SRB 301 LCI | 24V AC/DC | Dry contacts | 1 | 3 | 1 N.C. | Yes | Manual or Automatic | Yes (selectable) |
| SRB 301 LCB | 24V AC/DC | Dry contacts or PNP-type outputs | 1 | 3 | 1 N.C. | Yes | Manual or Automatic | No |
| SRB 301 MC | 24V AC/DC | Dry contacts or PNP-type outputs | 1 | 3 | 1 N.C. | Yes | Manual or Automatic | Yes |
| SRB 301 MA | 24V AC/DC | Dry contacts or PNP-type outputs | 1 | 3 | 1 N.C. | Yes | Monitored-manual | Yes (selectable) |
| SRB 301 ST | 24V AC/DC | Dry contacts or PNP-type outputs | 1 | 3 | 1 N.C. | Yes | Monitored-manual or Automatic | Yes (selectable) |
| SRB 301 ST-230V | 48V-230V AC | Dry contacts | 1 | 3 | 1 N.C. | Yes | Monitored-manual or Automatic | No |
| SRB 301 SQ-230V | 48V-230V AC | Dry contacts | 1 | 3 | 1 N.C. | Yes | Monitored-manual or Automatic | Yes |
| SRB 324ST | 24V AC/DC | Dry contacts or PNP-type outputs | 1 | 3 (stop 0) 2 (stop 1) | 1 N.C. plus 3 PNP | Yes | Monitored-manual or Automatic | Yes |
| SRB 401 LC | 24V AC/DC | Dry contacts | 1 | 4 | 1 N.C. | Yes | Manual or Automatic | Yes |
| SRB 504 ST | 24V AC/DC | Dry contacts or PNP-type outputs | 1 | 5 | 1 N.C. plus 3 PNP | Yes | Monitored-manual or Automatic | Yes |

| Model | Operating Voltage (U _B) | Types of Inputs Monitored | No. of Input Devices Monitored | No. of Safety Outputs | No. of Auxiliary Outputs | Feedback Monitoring | Type of Reset | Cross-short Monitoring |
|--|-------------------------------------|---------------------------|--------------------------------|-----------------------|--------------------------|---------------------|--------------------|------------------------|
| DIFFERENTIATED-INPUT SAFETY CONTROLLERS | | | | | | | | |
| SRB 202 C | 24V DC | Dry Contacts | 2 | 2 | 2 N.C. | Yes | Depends upon model | Depends upon model |
| SRB 400 C | 24V DC | Dry Contacts | 2 | 4 | None | Yes | Depends upon model | Depends upon model |
| SAFETY OUTPUT EXPANSION MODULE | | | | | | | | |
| SRB 402 EM | 24V AC/DC | N/A | N/A | 4 | 2 N.C. | Yes | Automatic | N/A |
| SRB 401 EM | 115V AC | N/A | N/A | 4 | 1 N.C. | Yes | Automatic | N/A |
| INPUT EXPANSION MODULE | | | | | | | | |
| Protect-IE | 24V DC | Dry contacts | 4 | N/A | 4 PNP | N/A | N/A | Yes |
| Protect-PE | 24V DC | Dry/PNP contacts | 4 | N/A | 5 PNP | N/A | N/A | Yes |

16 IP69K



IP69K Light Curtain



CSS30S (Pulse Echo)



N-Series Control Devices & Indicator Lights



K Series joysticks



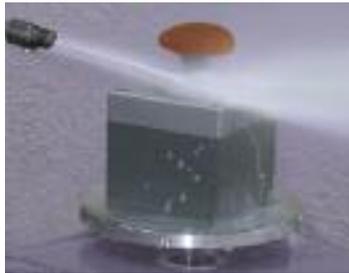
AZM300 (RFID)



RSS36 (RFID)



BNS40S (Coded-magnet)



IP69K Test environment

Schmersal offers a range of products that meet IP69K sealing requirements ... tolerating high temperature (up to 80°C) steam or water washdowns at pressures up to 1500 psi. They are easy to clean, specifically designed to prevent the accumulation of process substances, dirt and/or bacteria.

The IP69K rating is ideal for applications where hygienic conditions are critical (food processing, medical equipment, meat packaging and pharmaceutical manufacturing). Also for harsh outdoor environments, including construction equipment, all-terrain vehicles, portable equipment, marine and automotive applications.

The range of IP69K-rated products include N series control devices and indicator lights, K series joysticks, Type 2 or 4 safety light curtains, and non-contact sensors which use coded magnets, RFID, or Pulse Echo technologies.

For additional product information, please consult factory.



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