



MACHINE GUARDING SAFETY PRODUCTS

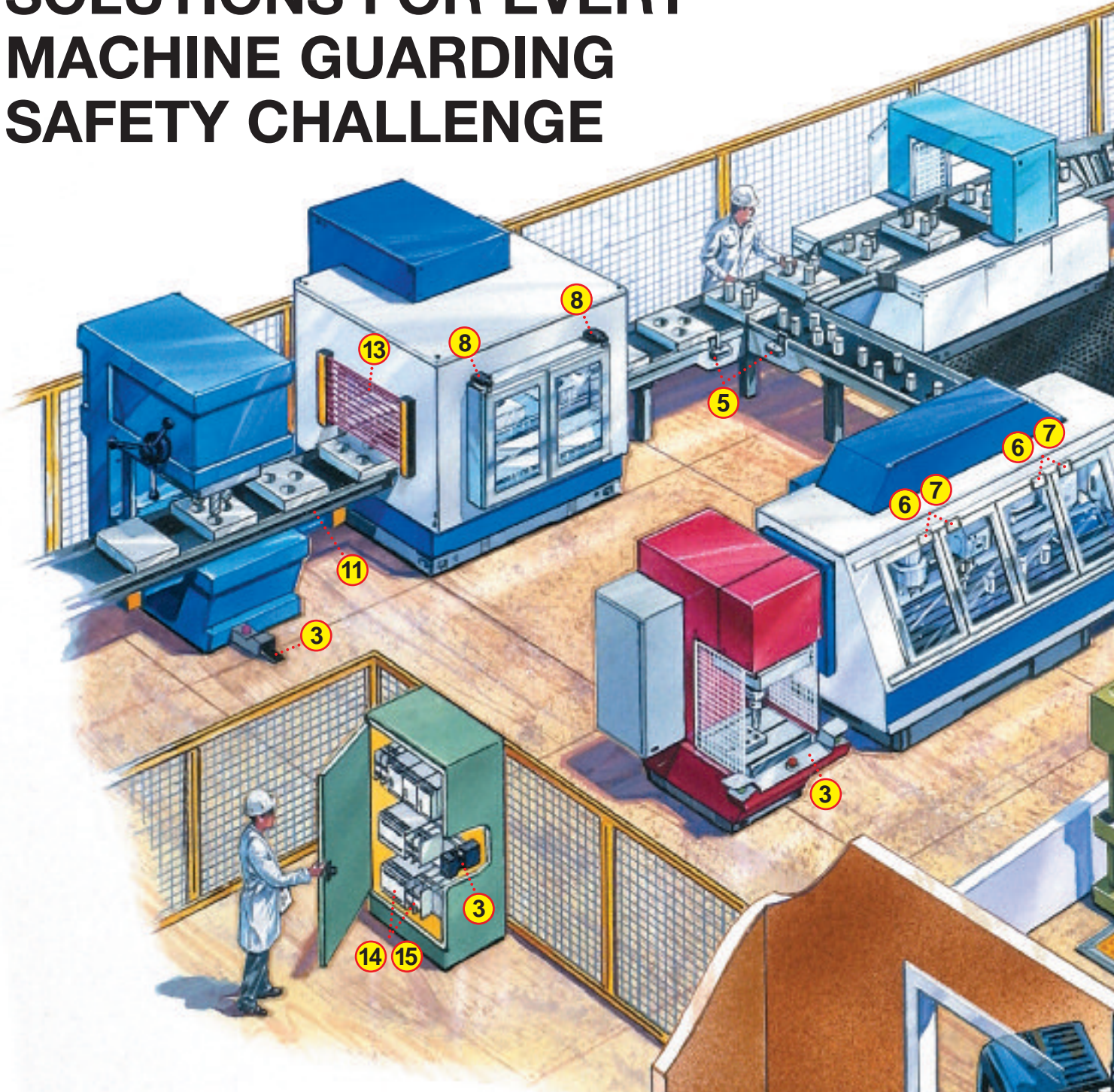
- Safety Interlock Switches
- Non-Contact Safety Sensors
- Emergency Cable-Pull Switches
- Safety Controllers
- Safety Light Curtains
- Hinged Safety Interlocks
- Safety Edges/Bumpers
- Safety-Rated Limit Switches
- Safety Foot Switches
- Safety Pressure Mats



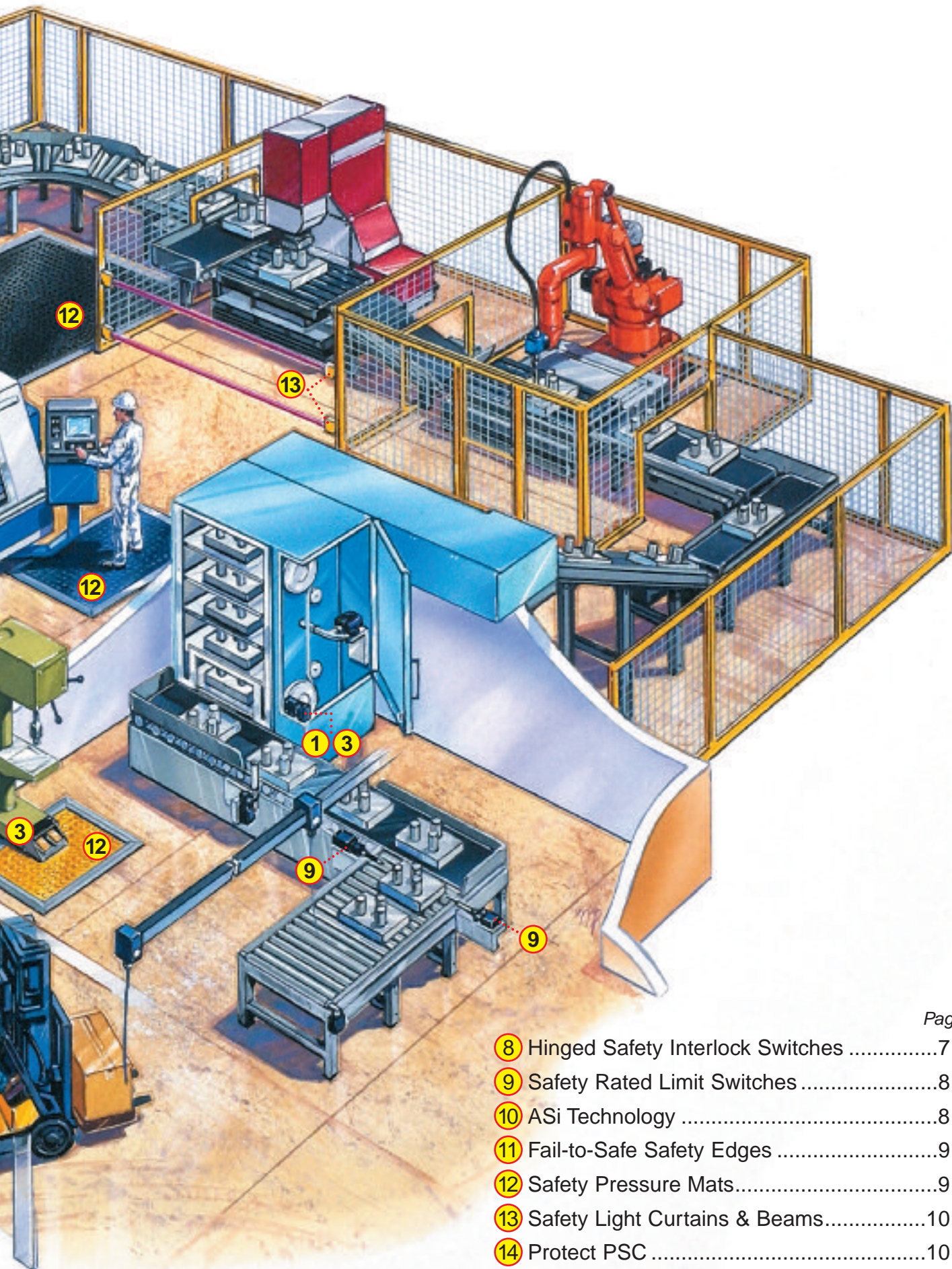
SCHMERSAL

Turning Workplaces Into Safe Places®

SOLUTIONS FOR EVERY MACHINE GUARDING SAFETY CHALLENGE



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1 KEYED INTERLOCK SWITCHES



AZ 15/16



AZ 17



AZ 335



TZG



SHGV



AZ 415

SELECTION GUIDE			
Switch Series	Housing Material	Envelope Dimensions	Contact Configurations
ST14	Glass-fiber, reinforced thermoplastic	3/4" x 1 1/4" x 2"	1 NO & 1 NC 2 NC
AZ17 AZ17zi	Glass-fiber, reinforced thermoplastic	1 1/4" x 1 1/4" x 2 1/2"	1 NO & 1 NC 2 NC
AZ15/16 AZ16zi	Glass-fiber, reinforced thermoplastic	1 1/4" x 2" x 3"	1 NC 1 NO & 1 NC 2 NC 1 NO & 2 NC 3 NC
TZG	Glass-fiber, reinforced thermoplastic	1 3/4" x 2" x 3 3/4"	1 NO & 1 NC 2 NC
SDG	Die-cast aluminum	1 3/4" x 2" x 6"	1 NO & 2 NC 2 NO & 1 NC 3 NC
AZ335	Die-cast aluminum	1 1/2" x 1 3/4" x 4 1/2"	1 NO & 1 NC 2 NC 1 NO & 2 NC 3 NC
SHGV (Key Transfer System)	Die-cast aluminum	1 3/4" x 1 3/4" x 4"	1 NO & 1 NC
AZ415	Die-cast aluminum	1 3/4" x 3 1/2" x 4"	2 NO & 2 NC

2 KEYED INTERLOCK SWITCHES WITH SOLENOID LATCHING



TZK



AZM 161



AZM 415



AZM 170

SELECTION GUIDE			
Switch Series	Housing Material	Envelope Dimensions	Contact Configurations
AZM170	Glass-fiber, reinforced thermoplastic	1 1/4" x 2 1/2" x 5"	1 NO & 1 NC 2 NC
AZM161	Glass-fiber, reinforced thermoplastic	1 1/4" x 3 1/2" x 5 1/8"	2 NO & 4 NC
TZF/TZM	Glass-fiber, reinforced thermoplastic	1 1/2" x 4" x 5"	2 NO & 1 NC*
TKF/TKM	Die-cast aluminum	2 1/2" x 3 1/2" x 8"	2 NO & 2 NC
TZK	Glass-fiber, reinforced thermoplastic	1 3/4" x 2" x 7"	1 NO & 2 NC*
AZM415	Die-cast aluminum	2" x 5" x 5 1/2"	2 NO & 2 NC 3 NO & 3 NC

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

3 APPLICATION ACCESSORIES



STS



B25



TG-1



ZSD



TFH



SEPK(G)

SELECTION GUIDE

STS Safety Handle Assembly and Guard Alignment Aid, with Emergency Release Option
For AZ16, AZ3350, AZ415, AZM161 & AZM415 Interlock Switches

B25 Safety Door Handle
For AZ17 & AZM170 Interlock Switches

TG-1 Safety Door Handle
For unlocking spring-to-lock solenoid 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

4 SPEED CONTROL



FWS



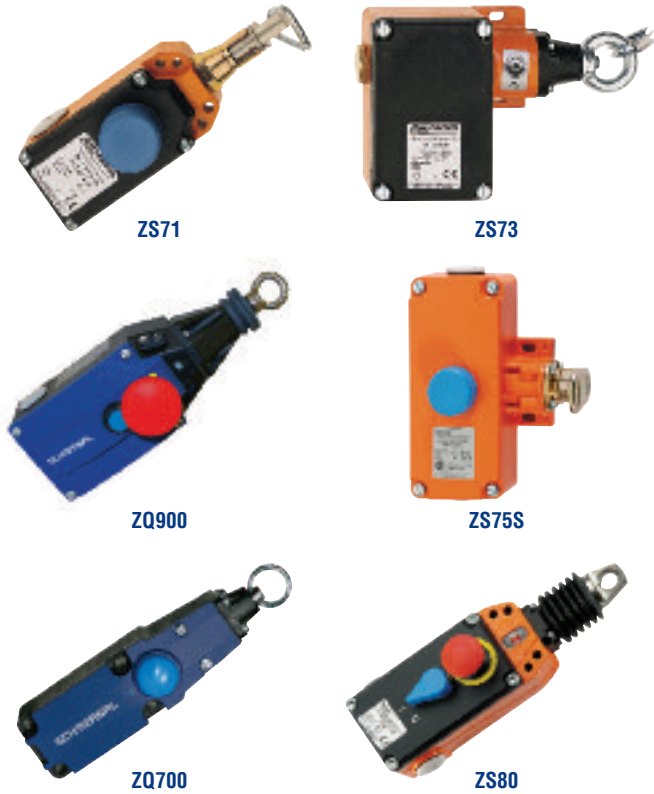
PDMS

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
SSW 301 HV	115VAC	Back EMF	Sensor-less standstill	2	1 NC
AZR31S1	24VDC 110VAC 230VAC	Back EMF	Sensor-less standstill	3	1 NC
PDMS*	24VDC	Encoder Resolver Proximity switches	Upper/lower Standstill Safe Motion	Various	Various

*Protect Drive Monitoring System. Please consult factory for additional information.

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
ZS71	Die-cast aluminum	65 feet	1 NO & 1 NC 2 NC	Available
ZS73	Die-cast aluminum	165 feet	1 NO & 1 NC 2 NC	No
ZS75	Die-cast aluminum	165 feet	1 NO & 1 NC 2 NC 2 NO & 2 NC 4 NC	No
ZS441	Die-cast aluminum	80 feet	1 NO & 1 NC 2 NC	No
Bi-directional ZS75S	Die-cast aluminum	165 feet (Each Direction)	2 NO & 2 NC 4 NC	No
ZS80	Die-cast aluminum	165 feet	2 NO & 2 NC 1 NO & 3 NC 4 NC	Available
ZQ900	Die-cast aluminum	165 feet	1 NO & 1 NC, 2 NC 1 NO & 3 NC, 4 NC 2 NO & 2 NC	Available

6 NON-CONTACT SAFETY SENSORS



SELECTION GUIDE			
Switch Series	Approximate Envelope Dimensions	Operating Voltage	Contact Configurations
BNS250	1.0" x 1.4" x 0.5"	24 VDC	1 NO & 1 NC 1 NO & 2 NC
BNS260	1.0" x 1.4" x 0.5"	24 VDC	1 NO & 1 NC 1 NO & 2 NC 2 NC, 3 NC
BNS33	3.5" x 1.0" x 0.5"	24 VAC/DC 120 VAC/DC	1 NO & 1 NC 1 NO & 2 NC 1 NO, 1 NC, 2 NC
BNS33S	3.5" x 1.0" x 0.625"	100 VAC/DC	1 NO & 1 NC 1 NO & 2 NC 2 NC, 3 NC
BNS36	3.5" x 1.0" x 0.5"	24 VDC	1 NO & 1 NC 1 NO & 2 NC 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
BZ16	1.25" x 2" x 3"	24 VDC	1 NO & 1 NC
BNS-B20	N/A	24 VDC	1 NO & 1 NC

7 PULSE-ECHO BASED NON-CONTACT SAFETY SENSORS TO MEET CC4/SIL3



AZ/AZM 200



CSS 34



CSS 180



MZM 100



PROFIBUS Gateway*



*Please consult factory.

SELECTION GUIDE

Switch Series	Type	Envelope Dimensions	Contact Configurations
AZ 200	Interlock	1.5" x 8.75" x 1.5"	2 PNP Safety Outputs 1 or 3 Diagnostic Outputs
AZM 200	Solenoid Interlock	1.75" x 9" x 2"	2 PNP Safety Outputs 1 Diagnostic Output
MZM 100	Magnetic-Latching Interlock	1.75" x 7.25" x 1.75"	2 PNP Safety Outputs 1 Diagnostic Output
CSS 180	Cylindrical Safety Sensor	0.7" x 3.6"	2 PNP Safety Outputs
CSS 30S	Stainless Steel Cylindrical Safety Sensor	1.18" x 3.5"	2 PNP Safety Outputs 1 Diagnostic Output
CSS 34	Rectangular Safety Sensor	1" x 4" x 1"	2 PNP Safety Outputs 1 Diagnostic Output

8 HINGED SAFETY INTERLOCK SWITCHES



T.235



TESZ



TVS335



TESF

SELECTION GUIDE

Switch Series	Housing Material	Angular Displacement for Contact Opening	Contact Configurations
ES95 SB	Glass-fiber, reinforced thermoplastic	7°	1 NO & 1 NC 2 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
TESZ	Glass-fiber, reinforced thermoplastic	4.5°	1 NO & 1 NC 2 NC 3 NC
TESF	Die-cast zinc	3° Fixed or Adjustable	1 NO & 2 NC 2 NO & 2 NC

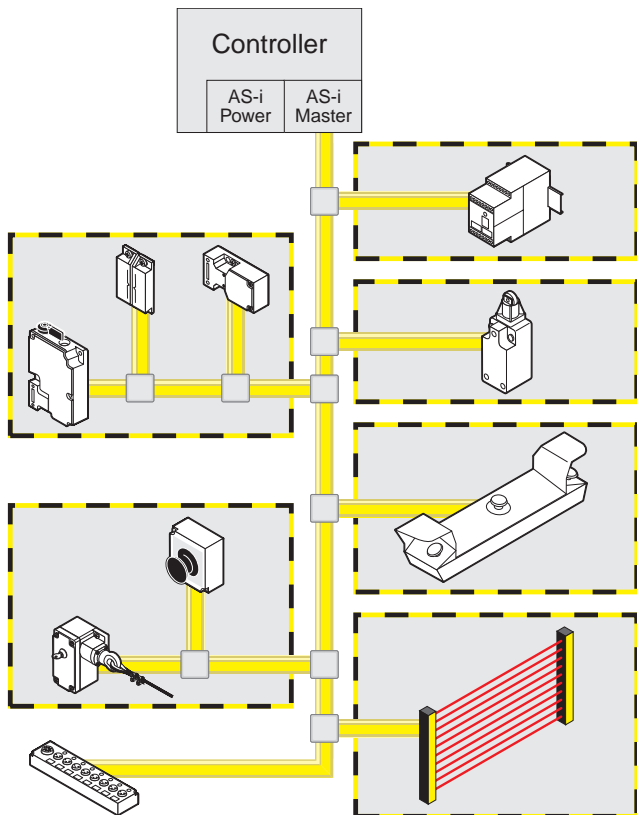
9 SAFETY-RATED LIMIT SWITCHES



SELECTION GUIDE				
Switch Series	Housing Material	Housing Dimensions	Degree of Protection	Contact Configurations
Z/T235	Die-cast zinc	1 ¹ / ₄ " x 1 ¹ / ₄ " x 2 ¹ / ₂ "	IP67	1 NO & 1 NC 2 NO 2 NC
Z/T236	Glass-fibre reinforced thermoplastic	1 ¹ / ₄ " x 1 ¹ / ₄ " x 2 ¹ / ₂ "	IP67	1 NO & 1 NC 2 NO 2 NC
Z/T335	Die-cast aluminum	1 ¹ / ₂ " x 1 ¹ / ₄ " x 3"	IP67	1 NO & 1 NC 2 NO 2 NC
Z/T336	Glass-fibre reinforced thermoplastic	1 ¹ / ₂ " x 1 ¹ / ₂ " x 3"	IP67	1 NO & 1 NC 2 NO 2 NC
Z332	Die-cast aluminum	1 ¹ / ₂ " x 1 ¹ / ₂ " x 3"	IP65	1 NO & 1 NC (snap-action only)
C50	Glass-fibre reinforced thermoplastic	1" x 1 ¹ / ₈ " x 3 ³ / ₄ "	IP30	1 NO & 1 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. Each features a self-adjusting emitter-receiver pair to assure the same sensitivity regardless of length. When deformed the optical beam is interrupted disabling the safety controller outputs. These IP68-rated edges are available for Safety Category 1 or 4 (depending upon the safety controller selected.) With a choice of aluminum mounting rails, they offer easy installation wherever crushing or shearing points must be safeguarded.

12 SAFETY PRESSURE MATS



SMS 4



SMS 5

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 and/or sizes. Their unique rugged construction features ...

- A 100% bond between vinyl surface and electrodes ... eliminating migration of moisture and shorting.
- Dry internal atmosphere ... eliminating possible condensation and shorting.
- Rugged mechanical cable terminations coupled with a unibody molded stress relief.

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.

Tolerant to fork lift traffic, each is fully CE-compliant and, when coupled with our compatible safety controllers, meets Safety Category 3 requirements.

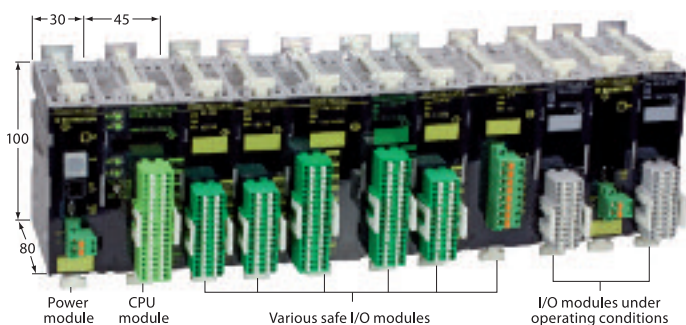
13 OPTO-ELECTRONIC SAFETY DEVICES



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, PL_e 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

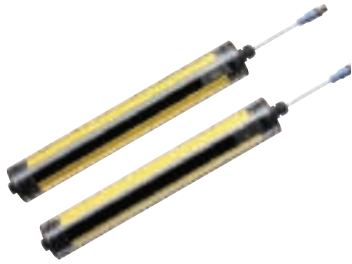


SELECTION GUIDE

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 (dry contacts)	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 or PNP-type outputs	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 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-02 & Protect-IE-11	24V DC	Dry contacts	4	N/A	4 PNP	N/A	N/A	Yes

16 IP69K



IP69K Light Curtains



CSS 30S



N-Series Control Devices & Indicator Lights



NHS Main Switches



IP69K Test environment



BNS 33S

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 non-contact and pulse-echo safety sensors, Type 2 & 4 safety light curtains, and N-series control devices, indicator lights, joysticks and stainless steel enclosures.

For additional product information, please consult factory.

SCHMERSAL USA

660 White Plains Road
Suite 160
Tarrytown, New York 10591

Tel: (914) 347-4775
Fax: (914) 347-1567

E-mail: info@schmersalusa.com

www.schmersalusa.com

SCHMERSAL Canada

15 Regan Road
Unit #3
Brampton, Ontario L7A 1E3

Tel: (905) 495-7540
Fax: (905) 495-7543

E-mail: info@schmersalcanada.com

www.schmersalcanada.com