MACHINE GUARDING SAFETY PRODUCTS

SCHMERSAL
THE DNA OF SAFETY

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CONNECTIVITY

Schmersal offers several simple and low cost plug & play field installation systems for series wiring of safety devices, achieving up to Cat. 4 / PLe / SIL 3. These systems allow for individual evaluation of diagnostic signals from each connected safety device, with locking devices being actuated individually. Most installation systems are capable of communicating with common field buses, via the PSC1 Programmable Controller or a Universal Gateway module.

Series wiring...

with CSS-Y adaptors

Adaptor with M12 connection used to series connect up to 31 electronic safety devices with Serial Diagnostics (SD).

CSS-Y-8P

CSS-Y-A-8P

or

with PFB

The PFB is an IP67 rated passive field box which can connect up to 4 electronic safety devices or Serial Diagnostic (SD) devices in series. It features integrated LEDs to show status of each device, and is easy to configure via DIP switches.

PFB-IOP-4M12-IOP
PFB-SD-4M12-SD

or

with PDM

The PDM Passive distribution module for series-wiring, designed for mounting in panels. It can connect up to 4 electronic safety devices or Serial Diagnostic (SD) devices in series. It features integrated LEDs to show status of each device, and is easy to configure via DIP switches.

PDM-IOP-4CC-IOP
**PDM-SD-4CC-SD**

or

SCHMERSAL
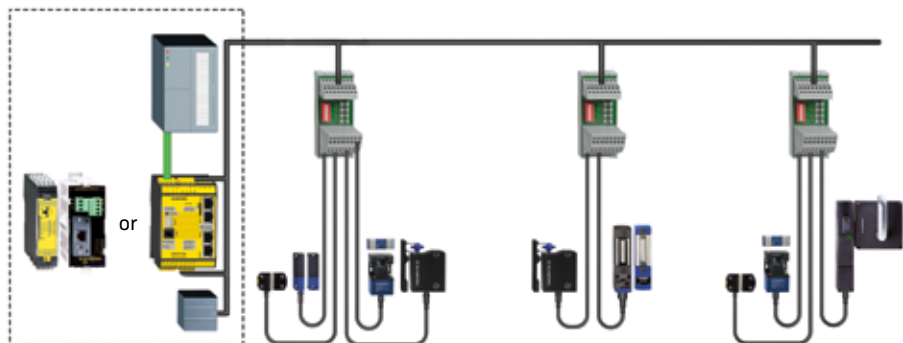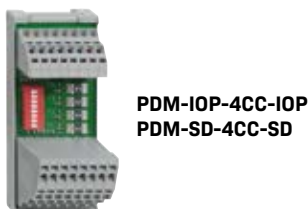
with SRB-E-204PE

The active input expander modules SRB-E-204PE are used for safe series connection of electromechanical with dry contacts or electronic devices having OSSD semiconductor outputs. Up to 4 devices can be connected per module. The module can be configured for up to 15 different application settings via a rotary knob switch on the face of the unit.

SRB-E-204PE
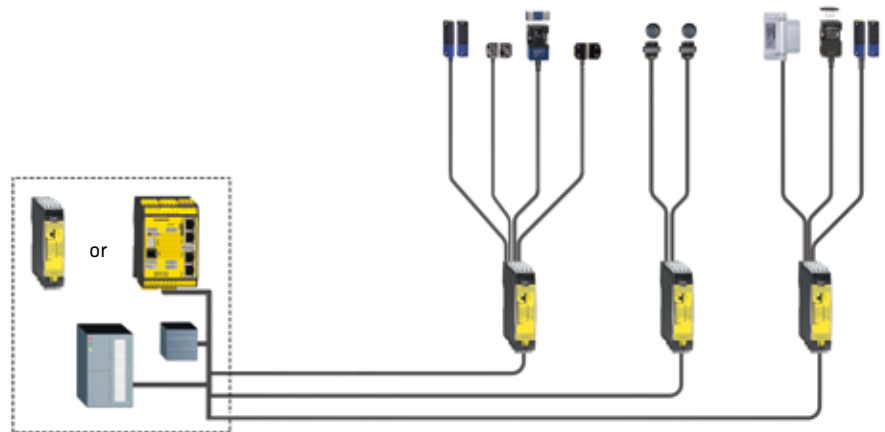
with SFB

The SFB is a safety field box for various safety field bus systems which allows simple plug-and-play installation via M12 connectors, of up to eight safety devices per box.

SFB-PN-IRT-8M12-IOP

SFB-EIP-8M12-IOP

SFB-EC-8M12-IOP
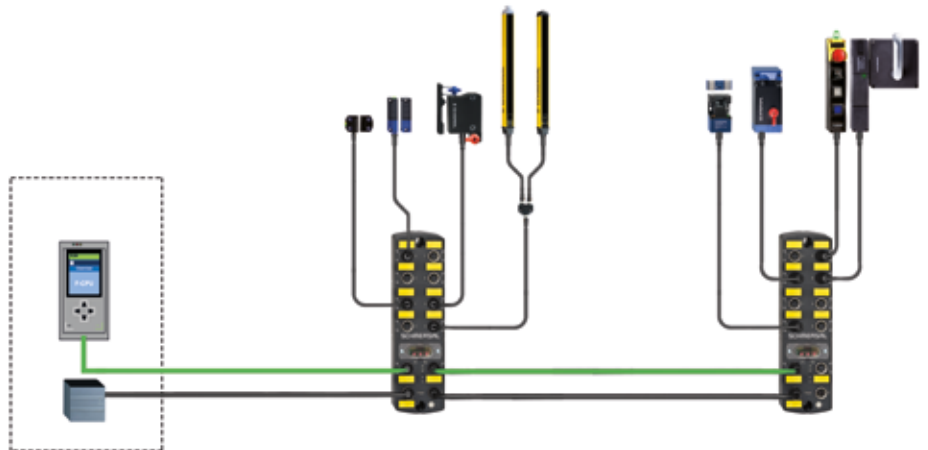
with AS-Interface Safety at Work

AS-Interface Safety at Work is a safety bus system based upon the open standard of AS-International. It is a simple yet flexible solution to quickly, efficiently, and cost-effectively integrate a vast safety system. Safety and non-safety components are connected to a central two wire cable which carries power and signals to a monitor. The system can be connected to popular field buses.

See page 26 for a list of AS-I integrated safety devices. Or find the AS-I Logo throughout the brochure for compatable items.

PROGRAMMABLE SAFETY CONTROLLER

Series	PSC1-C-10	PSC1-C-100	SafePLC2
Inputs	14 safe inputs (up to PLe / SIL3)	14 safe inputs (up to PLe / SIL3) 20 selectable safe in-/outputs	Programming Software ■ Modern, object-oriented environment

Outputs	4 selectable safe semiconductor:
	  2 A p-switching or p-/n-switching
	2 safe relay for 24 VDC or 230 VAC, 2 A
	2 signaling, 250 mA
	2 pulse (clock outputs) for monitoring of
	  dry contacts
		4 selectable safe semiconductor:
		  2 A p-switching or p-/n-switching
		2 safe relay for 24 VDC or 230 VAC, 2 A
		2 signaling, 250 mA
		2 pulse (clock outputs) for monitoring of
		  dry contacts
			■ Preconfigured elements
			■ Application code reuse by macros
			■ Search functions
			■ Tracking by color representation and
			  status messages
			■ Easy to detect safety functions through

Options	Modular expandable with up to 2 I/O
	  modules (central)
	Universal communication interface
	Memory card (SDHC)
	Safe drive monitoring, for 1 or 2 axes
	Integrated serial diagnostic (SD) gateway
		Modular expandable with up to 8 I/O
		  modules (central / decentral)
		Universal communication interface
		Memory card (SDHC)
		Modular expandable up to 6 safe drive
		  monitoring modules (max. 12 axes)
			practice oriented libraries for logic,
			  Safe Drive Monitoring, SD-bus and
			  encoder elements
			■ Configurable user permissions

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The PSC1 is a modular and freely programmable compact safety controller for safe signal processing of safety switchgear. The system has several distinct features:

Universal communication interface

Universal field-bus connections available

Serial Diagnostic gateway

Up to 31 Schmersal electronic devices with Serial Diagnostics can be connected and evaluated, with their extended diagnostic data sent via the PSC1 universal communication interface to a field-bus system.

Memory card

Written programs can be downloaded to the PSC1 module either by computer interface or by memory card option on available modules. The memory card option allows for quick programming of multiple identical systems.

Safe Master to Master communication

Safe cross-communication is used to combine safety controllers, to safely exchange data via local Ethernet SMMC communication. In a complete system, safe signals from emergency stop or signals from interlocks can be communicated using the safe cross-communication.

Safe remote IO communication
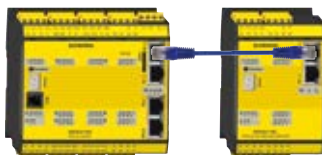
For the decentral application structure the PSC1-E-37-14DI-4DO-2RO-RIO remote I/O expansion module is available. The local communication is realized via the Ethernet SDDC protocol.

Safe drive monitoring

Many safety features are supported:

Safe shut-down:
- Safe Torque OFF (STO)
- Safe Break Control (SBC)

Safe stopping:
- Safe Operating Stop (SOS)
- Safe Stop 1 (SS1)
- Safe Stop 2 (SS2)

Safe monitoring:
- Safe Speed Monitor (SSM)
- Safe Cam (SCA)

Safe movement:
- Safely-Limited Speed (SLS)
- Safe Speed Range (SSR)
- Safe Direction (SDI)
- Safely-Limited Acceleration (SLA)
- Safe Acceleration Range (SAR)

Safe positioning:
- Safely-Limited Position (SLP)
- Safely-Limited Increment (SLI)
- Safely Emergency Limit (SEL)

GENERAL PURPOSE SAFETY CONTROLLERS

Model	Operating Voltage (UB)	Types of Inputs Monitored	No. of Devices Monitored	No. of Safety Outputs	No. of Aux. Outputs	Feedback Monitoring	Type of Reset	Cross-short Monitoring
SRB-E-201LC	24V DC	Dry & PNP	1	2 PNP	1	Yes	Monitored-manual, Automatic, or Manual	Selectable
SRB-E-201ST	24V DC	Dry & PNP Two-hand control	1	2 PNP	1	Yes	Monitored-manual, Automatic, or Manual	Selectable
SRB-E-204ST	24V DC	Dry & PNP	4	2 PNP	4	Yes	Monitored-manual, Automatic, or Manual	Selectable
SRB-E-301ST	24V AC/DC	Dry & PNP Safety Mats	1	3 relay	1	Yes	Monitored-manual, Automatic, or Manual	Selectable
SRB-E-301MC	24V AC/DC	Dry & PNP	1	3 relay	1	Yes	Monitored-manual, Automatic, or Manual	Selectable
SRB-E-302ST	24V AC/DC	Dry & PNP	2	2 dry contact 1 PNP	2	Yes	Monitored-manual, Automatic, or Manual	Selectable
SRB-E-212ST	24V DC	Dry & PNP Two-hand control	1	2 stop 0 1 stop 1	2	Yes	Monitored-manual, Automatic, or Manual	Selectable
SRB-E-232ST	24V DC	Dry & PNP	1	2 stop 0 3 stop 1	2	Yes	Monitored-manual, Automatic, or Manual	Selectable
SRB-E-322ST	24V DC	Dry & PNP	1	3 stop 0 2 stop 1	2	Yes	Monitored-manual, Automatic, or Manual	Selectable
Double Reset								
SRB 100 DR	24V AC/DC	Dry contacts	2	1	None	N/A	Monitored-manual DOUBLE RESET	N/A
Monitor 2 Safety Functions								
SRB-E-402ST	24V DC	Dry & PNP Two-hand control	2	4 relay	2	Yes	Monitored-manual, Automatic, or Manual	Selectable
Safety Output Expansion Module								
SRB-E-402EM	24V AC/DC	N/A	N/A	4	2 NC	Yes	Monitored-manual, Automatic, or Manual	N/A
SRB-E-602EM	24V AC/DC	N/A	N/A	*	2 NC	Yes	Monitored-manual, Automatic, or Manual	N/A
Input Expansion Module								
SRB-E-204PE	24V DC	Dry & PNP	4	2 **	4	No	N/A	Selectable

* 1 x 6 dry safety outputs with one safety controller -Or- 2 x 3 dry safety outputs with two safety controllers   ** SRB-E-204PE outputs must be monitored by safety controller

General Purpose Safety Controllers
The PROTECT SRB-E series are multifunctional, configurable, electronic safety controllers. Each module in the series can be adjusted to one of up to 11 preset configurations which include selecting the type of reset, activating or deactivating cross-wire monitoring, and selecting the monitored contact configuration all via a rotary dial on the front. Once changed to the desired setting, the dials are protected from further adjustment by a transparent front cover which can be easily secured.
All conventional safety sensors and electromechanical safety equipment can be monitored. The safety relay modules of the PROTECT SRB-E series can be used in applications up to Category 4, PLe in accordance with ISO 13849 and SIL 3 in accordance to IEC 61508.

SAFE DRIVE SPEED AND STANDSTILL MONITORING

Many machines pose hazards to the operator while trying to clear jams, setting up, or other operational aspects that requires interaction. There are many safe drive monitoring features that can be applied to make the operation safer, with safe speed monitoring and standstill monitoring the most prevalent. These are used not only during the normal automatic operation of the machine but also during manual operation of the machine to lower the risk and keep the operator safe.

Methods of monitoring speed or standstill
There are several methods of monitoring safe speeds and standstill:

Back EMF monitoring
Back electromotive force, or Back EMF, is a phenomenon that occurs in electric motors where the rotating armature in the presence of a magnetic field produces a voltage which opposes the original applied voltage. Since Back EMF is proportional to the armature rotational speed and remains after the supply voltage has been removed, monitors can use it to indirectly measure the motor's speed or determine standstill if absent. The DN3PS2 standstill monitoring relay uses this method.

Safe motion monitoring via frequency
Safe speed is determined by monitoring the frequency of the rotating field of the motor. This unique method is cost effective because it does not require sensors and has minimal setup. DN3PD2 safe drive monitors use this method.

Monitoring sensor signals
There are a variety of devices that can generate a signal based on the movement of the machine, such as proximity sensors, resolvers, and encoders. The signals generated are picked up by the monitor to determine speed or standstill. The SRB-E...FWS Series uses proximity sensors to monitor standstill while the PSC1 can use various types of encoders to monitor multiple axis.

Fail to safe timer
Another method to insure standstill is to incorporate a fail-to-safe timer in the circuit. Once power is removed from a motor running at a specific speed, it will usually reach standstill in a consistent amount of time. The timer can be set to delay the enabling signal to unlock the guard doors for the duration needed for the motion to stop. The SRB-E...FWS Series can be used to safely unlock guards at a consistent defined time.

Model	Type	Operating Voltage	Input types	Enabling circuits	Auxiliary outputs
SRB-E-302FWS-TS	Standstill, timer	24V DC	1 or 2 impulse sensors	2 Relay 1 PNP	2 PNP
SRB-E-402FWS-TS	Standstill, timer, guard monitoring*	24V DC	1 or 2 impulse sensors	2 Relay 2 PNP	1 NC 1 PNP
DN3PS2	Sensorless Standstill	24V DC	Back EMF	2	None
DN3PD2	Safe Drive Monitor	24V DC	Frequency	2 Relay	2

* offers additional guard door monitoring circuit

Serial Diagnostic Gateway

Model	Field Bus Protocol
SDG-ETC-RJ-CC	EtherCat
SD-I-DP-V0-2	PROFIBUS DP
SD-I-U-CCL	CC Link
SD-I-U-EIP	EtherNet IP
SD-I-U-MT	Mobius/TCP
SD-I-U-DN	DeviceNet
SD-I-U-PN	ProfiNetIO
SD-I-U-EC	EtherCAT

Serial Diagnostic Gateways are used to connect the diagnostic signals of safety switchgear with integrated SD interface to a field bus system. Comprehensive volumes of status and diagnostic data of the SD devices are transmitted to the control system through the field bus interface. This system allows different devices to be connected in the system, with a maximum of 31 devices. Series-wiring of the safety channels and the diagnostic cables in the field results in reduced wiring effort and cost without sacrificing data transmission.

SDG-ETC   SD-I-U

ELECTRONIC SAFETY SENSORS

Series	CSS180	CSS30S	CSS34	RSS260	RSS36	RSS16
Technology	Pulse Echo	Pulse Echo	Pulse Echo	RFID	RFID	RFID
Housing	Thermoplastic	Stainless Steel	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic
IP Rating	IP65, IP67	IP65, IP67, IP68, **IP69K**	IP65, IP67	IP65, IP67	IP65, IP67, **IP69K**	IP65, IP66, IP67
Dimensions (inches)	0.7 dia | 3.6	1.18 dia | 3.5	1 | 4 | 1	1.5 | 1.25 | 0.7	1 | 4.2 | 1	2 | 3.5 | 1.25
Connections	Quick Connect Prewired cable	Quick Connect	Quick Connect Prewired cable	Quick Connect	Quick Connect	Screw terminals Cage clamps Quick Connect
Contact Options	1P2P	1P2P SD2P	1P2P SD2P	1P2P SD2P	1P2P SD2P	1P2P SD2P
Features	Flush mounting Integrated LED	Concealed mounting Integrated LED	Actuation from end or side EDM Version Integrated LED	Individual coding Integrated LED EDM & E-stop monitoring	Individual coding Magnetic latching version (18N) with door stop Integrated LED	Individual coding Magnetic latching version (40/60N) with door stop Integrated LED
Actuators (order separately)	CST180-1 CST180-2	CST30S-1	CST34-V-1 CST34-S-1 CST34-S-3	RST260-1 RST16-1 RST-U-2	RST36-1 RST36-1-R RST-U-2	RST16-1-R RST16-1 RST-U-2
Available as	⟨Ex⟩	**SD**	**SD**	⚠ASi **SD**	⚠ASi **SD**	⟨Ex⟩ **SD**

Electronic safety sensors

Electronic devices have integrated processors to provide continuous internal function tests and monitoring of the safety outputs. They can be wired in series without detriment to the safety levels. Diagnostic LED's on the sensor indicate various errors, misalignment and door open/closed signaling. Several models are available with serial diagnostics, for more advanced indication and data transfer to field bus systems.

Models which use radio frequency identification (RFID) can offer the option of individual coding: The basic version of the sensor responds to any target actuator; The "I1" version only accepts the coded ID number of the specific target actuator which is taught in during the first start-up; The "I2" version allows the teach-in process to be repeated, allowing replacement of a lost or damaged actuator.

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ELECTRONIC LOCKING DEVICES

Series	MZM100	AZM201	AZM300	AZM40	AZM400
Technology	Pulse Echo	RFID	RFID	RFID	RFID
Locking	Electromagnet, 500 N	Solenoid, 2,000 N	Solenoid, 1,500 N	Bi-Stable Solenoid, 2,000 N	Motorized Bolt, 10,000 N
Housing	Thermoplastic	Thermoplastic	Thermoplastic	Metal & Plastic	Die cast aluminum
IP Rating	IP65, IP67	IP66, IP67	IP66, IP67, **IP69K**	IP66, IP67, **IP69**	IP66, IP67
Dimensions (inches)	1.75 | 7.25 | 1.75	1.57 | 8.66 | 1.96	3.4 | 4 | 1.33	1.57 | 4.7 | 0.79	6.2 | 3 | 1.85
Connections	Quick Connect	Screw terminals Cage clamps Quick Connect	Quick Connect	Quick Connect	Quick Connect
Contact Options	1P2P SD2P	1P2P SD2P	1P2P SD2P	1P2P	1P2P 2P2P (ST2)
Features	Door stop Magnetic latching Actuator monitored (B) or Guard Lock monitored	Individual coding Lockout device Emergency Exit Actuator monitored (B) or Guard Lock monitored (Z) or both (BZ)	Individual Coding Door Stop Adjustable latching Emergency Exit Lockout device	Individual Coding Countersink or Plan Housing (PH) Emergency Exit Lockout device	Individual Coding Emergency Exit Electric by-pass Guard Lock monitored (Z)
Actuators (order separately)	MZM100-B1.1	B1 Slide bolt B30 Door handle	AZ/AZM300-B1	AZM40-B1 AZM40-B1-PH	AZM400-B1
Available as	⚠ASi **SD**	⚠ASi **SD**	⚠ASi **SD**		
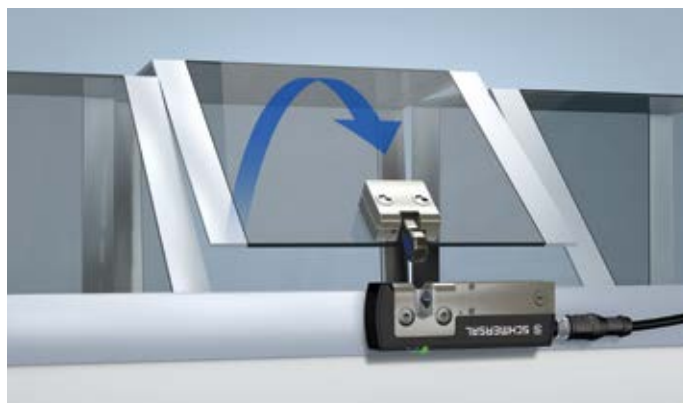
Electronic solenoid interlocks

Solenoid interlocks are designed for machines/work cells where access to a hazardous work area must be controlled until safe conditions exist. Their solenoid-latching feature permits locking a machine guard until dangerous conditions, which may exist immediately after removal of power, have abated. Solenoid-latching may be controlled by a time delay, motion detector, position sensor or other suitable component.

These electronic locking devices utilize a variety of methods – electromagnet, motorized bolt, or standard solenoid, and can generate a holding force up to 10,000 N to keep the guard secure. They also have a secondary integrated sensor, to monitor the door position. Even if the lock is defeated, the switch will still initiate machine shutdown when the actuator is moved away from the switch.

KEYED INTERLOCKS

Series	AZ15 / AZ16	AZ17	TZG	AZ215/216/315/316	AZ3350	AZ415	AZ201
Housing	Thermoplastic	Thermoplastic	Thermoplastic	X15: Metal X16:Thermoplastic	Die-Cast metal	Die-Cast metal	Thermoplastic
IP Rating	IP67	IP67	IP67	IP66, IP67	IP67	IP67	IP66, IP67
Dimensions (inches)	AZ15: 2 | 3 | 1.3 AZ16: 2 | 3.5 | 1.3	1.3 | 2.5 | 1.3	2 | 3.8 | 1.8	21X: 1.2 | 1.3 | 2.6 31X: 1.5 | 1.4 | 3	1.8 | 4.5 | 1.5	3.5 | 4 | 1.8	1.6 | 8.7 | 1.9
Connections	Screw terminals Quick Connect	IDC connection Quick Connect	Screw terminals	Screw terminals Quick Connect	Screw terminals	Screw terminals	Screw terminals Cage clamps Quick Connect
Contact Options	AZ15: 1 NC AZ16: 2 NC 1 NO & 1 NC 1 NO & 2 NC 3 NC	1 NO & 1 NC 2 NC	1 NO & 1 NC 2 NC	1 NO & 1 NC 2 NC 1 NO & 2 NC 3 NC	1 NO & 2 NC 3 NC	2 NC / 1NO,1NC 2 NC / 2 NC 2 NC / 2 NO 1NO,1NC/1NO,1NC	1P2P SD2P
Features	4 key entries Lockout device AZ16: indiv. coding	Indiv. coding 2 key entries	Rotatable head	Rotatable head 2 key entries	Rotatable head	Adjustable Ball latch (up to 400N)	RFID Sensor Individual coding Lockout device
Actuators (order separately)	AZ15/16-B1 -B2 (flexible) -B3 (flexible) -B6 (flexible) STS Door handle	AZ17/170-B1 AZ17/170-B5 AZ17-B6 B25 Door handle	TZ/CO TZ/CW Curved options Flexible options	AZ21X/31X-B1 AZ21X/31X-B5 AZ21X/31X-B6	AZ3350-B1 Curved options Flexible options STS Door handle	AZ/AZM415-B1 -B2 (flexible) -B3 (flexible) STS Door handle	B1 Slide bolt B30 Door handle
Available as	⚠ ASi ⟨Ex⟩				⟨Ex⟩	⟨Ex⟩	**SD**

Safety switches with separate actuator

The safety switches with separate actuators are suitable for sliding, hinged and especially for removable safety guards, which need to be closed to ensure the necessary operational security. They can also be fitted on profile sections and retrofitted on existing equipment.

Since the separate key is a distinct shape for each series, they are a Type 2 coded interlock by ISO 14119, and not easily actuated by a commonly available item. The key is often ordered separately since several mounting types are available.

Several series offer individual coding versions, where a unique key is provided to specifically to match the cams settings in the switch. With over 1000 possible unique keys, they are considered "high coded".

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SOLENOID INTERLOCKS

Series	AZM161	AZM170	TZF/TZM	AZM150	AZM415
Housing	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic	Die-Cast Aluminum
IP Rating	IP67	IP67	IP67	IP65, IP67	IP67
Dimensions (inches)	3.5 | 5.125 | 1.25	2.5 | 5 | 1.25	4 | 5 | 1.5	1.57 | 8 | 1.9	5 | 5.5 | 2
Connections	Screw terminals Cage clamps Quick Connect	IDC Connection Screw terminals Quick Connect	Screw terminals	Screw terminals	Screw terminals Quick Connect
Contact Options	1NO & 1NC / 3 NC 1NO & 1NC / 1NO & 2NC 1NO & 2NC / 3 NC 1NO & 2NC / 1NO & 1NC 1NO & 2NC / 1NO & 2NC	1NO & 1NC 2NC 1NO & 1NC / 1NO & 1NC 1NO & 1NC / 2NC 2NC / 1NC 2NC / 1NO 1NO & 2NC / 0NO & 0NC 1NO & 2NC / 1NO & 1NC 1NO & 2NC / 2NC	2 NC / 1 NO 2 NC / 2 NO	1NO & 1NC / 1NO & 1NC 1NO & 1NC / 2 NC 2NC / 1NO & 1NC 2NC / 2NC	1NO & 1NC / 1NO & 1NC 1NO & 1NC / 2NC 1NO & 1NC / 2NO 2NC / 1NO & 1NC 2NC / 2NC 2NC / 2NO
Features	2,000 N holding force Emergency Exit Individual coding	1,000 N holding force Individual coding	1,500 N holding force Rotatable head	1,950 N holding force Individual coding Rotatable head Emergency Exit	3,500 N holding force Emergency Exit
Actuators (order separately)	AZM161-B1 AZM161-B6 (flexible) STS Door handle + other accessories	AZ17/170-B1 AZ17/170-B5 AZM170-B6 (flexible) B25 Door handle	TZ/CO TZ/CW Curved options Flexible options	AZM150-B1 AZM150-B5 AZM150-B6L AZM150-B6R	AZ/AZM415-B1 -B2 (flexible) -B3 (flexible) STS Door handle
Available as	ASi Ex	ASi Ex			Ex

Solenoid interlocks

Solenoid interlocks permit locking a machine guard until dangerous conditions, which may exist immediately after removal of power, have abated. Solenoid-latching may be controlled by a time delay, motion detector, position sensor or other suitable component.

They are used for Guard Locking or Process Locking applications. Guard locking is used to protect personnel from a machine hazard, until a safe condition exists. The safety function must ensure that the guard is both "closed" and "locked". Process locking is used to prevent interruption of a machine process or cycle which can lead to product loss, material waste, tooling or machine damage, or extensive downtime (productivity loss) while trying to reset the process. For process locking devices, only Actuator monitoring (door "closed") is required.

DOOR HANDLE ACTUATORS

Series	STS	B30	B25	B4PS	DHS-150 NEW	DHS-U1 NEW
Compatible with	AZ16, AZ3350, AZ415, AZM161, AZM415	AZ201 AZM201	AZ17 AZM170	AZ415 AZM415	AZM150	Standalone AZM40 RSS Series
Emergency exit handle	Optional	Optional	--	--	--	--
Materials	Die cast aluminum	Thermoplastic	Thermoplastic	Metal	Metal with plastic	Thermoplastic
Features	Handle options Inside or outside mount Left or right opening Retracting actuator Lockout device option	Handle options Inside or outside mount Left or right opening Retracting actuator Lockout device option Individual coding 3 point locking option	Handle options Left or right opening Retracting actuator	Sliding bolt with handle Left or right opening Retracting actuator Ball latch on retraction	Left or right opening Mounting plate for switch Actuator ordered separately	Optional LED signaling in handle Optional pushbutton AZM40 or RST-U actuator inserts ordered separately

ACCESSORIES

TFA / TFI	CSA-M-1	PL--M20	Tamperproof screws	Mounting plates	Lock out devices
Guard alignment aid	Magnetic latch	Pilot light kits, M16 or M20	One-way screws	Available for most models, ordered separately	Available for most models, ordered separately

CONNECTOR CABLES

Compatible cables are available for every ST (Quick Connect) model

| M8 connector 3,4 & 6 pole | M12 connector 3,4, 5 & 8 pole | M23 connector 9 & 12 pole | Right angled connector (W) | Straight connector (G) | Double ended cable | Connector only (no cable) |

For more information, check our Online Product Catalog: products.schmersal.com/en_US   SCHMERSAL

CODED MAGNET SENSORS

Series	BNS260	BNS36	BNS40S	BNS16	BNS333	BNS30/300/303	BNS-B20
Housing	Thermoplastic	Thermoplastic	Stainless Steel	Thermoplastic	Thermoplastic	Thermoplastic Metal (BNS30)	Thermoplastic
IP Rating	IP67	IP67	**IP69K**	IP67, **IP69K**	IP65	IP67	IP67
Dimensions (inches)	1 | 1.4 | 0.5	1 | 3.5 | 0.5	1 | 3.5 | 0.5	2 | 3.5 | 1.25	1.7 | 4.5 | 1.7	1.18 dia | 3.07	4.7 | 4.7 | 1.7
Connections	Quick Connect Prewired cable	Quick Connect Prewired cable	Prewired cable	Screw Terminals Quick Connect	Screw Terminals	Quick Connect Prewired cable	Quick Connect Prewired cable
Contact Options	1 NO & 1 NC 2 NC 1 NO & 2 NC 3 NC	1 NO & 1 NC 2 NC 1 NO & 2 NC 3 NC	1 NO & 2 NC	1 NO & 2 NC	1 NC	30/300: 1 NC 303: 1 NO & 1 NC 2 NC 1 NO & 2 NC 3 NC	1 NO & 1 NC 2 NC 1 NO & 2 NC
Features	Optional LED	Optional LED	Rear side mounting Optional LED	Double actuation option	5 actuation planes	Optional LED	Optional LED
Actuators (order separately)	BPS260-1 BPS260-2	BPS36-1 BPS36-2	BPS40S-1, -C BPS40S-2, -C	BPS16		BPS300, BPS303 BPS303 SS (stainless steel)	BNS-B20-B01 (Door handle)
Available as	ASI	ASI	Ex	ASI		Ex (303)	

Safety sensors

Typical applications of safety sensors include machines where a high concentration of dust and contamination is expected to appear in hypersensitive areas such as food processing machines. Due to their non-contact operating principle, safety sensors feature smooth fitting and a large tolerance with regard to misalignments of sensor and actuator. These sensors use an array of magnetic reed switches and respond only to their coded magnet actuators. They cannot be defeated using common magnets. When used in safety applications, they should be monitored by a safety controller.

HINGED SAFETY SWITCHES

Series	T.C235	T.C236	TV.S335	TESZ	TESF	TESK
Type	Limit Switch	Limit Switch	Axle Limit Switch	Hinge replacement	Hinge replacement	Hinge replacement
Housing	Metal	Thermoplastic	Metal	Thermoplastic	Metal	Metal
Max rotation	180°	180°	360°	135°	180°	270°
Opening Angle	4.5° (preset for left, right or swing doors)	4.5° (preset for left, right or swing doors)	2°	4°	3° (Adjustable or preset @ 0° or 180°)	3° (Adjustable or preset @ 0° or 180°)
IP Rating	IP67	IP67	IP67	IP65	IP65	IP65
Dimensions (inches)	1.25 | 1.25 | 2.5	1.25 | 1.25 | 2.5	1.5 | 1.25 | 3	3 | 2.4 | 1.4	3.5 | 4.5 | 0.9	3 or 3.8 | 4.5 | 0.8
Connections	Screw Terminals	Screw Terminals	Screw Terminals Quick connector	Screw Terminals	Screw Terminals Quick connector	Quick Connect Prewired Cable
Contact Options	1 NO & 1 NC 2 NC 1 NC	1 NO & 1 NC 2 NC 1 NC	1 NO & 1 NC 2 NC 1 NO & 2 NC 3 NC	1 NO & 2 NC 3 NC	1 NO & 2 NC 2 NO & 2 NC	2 NC 1 NO & 1 NC 1 NO & 2 NC 1 NO & 3 NC 2 NO & 2 NC
Features	Rotatable head 90° steps	Rotatable head 90° steps	Universal joint Rotatable head 90° steps	Additional matching hinge	Additional matching hinge. Inside or surface mounting	Additional matching hinge. Inside or surface mounting.
Available as			⟨Ex⟩			

Safety switches for hinged guards

For hinged safety doors, there's an elegant, space saving and tamper-proof alternative to safety switches with separate actuator and position switches with safety function. Hinge safety switches fixed to the hinge side of the safety door eliminate the need for switches on the door itself and hence keep the operator's work area free of switches. Positive fixing of the hinge switches means they are particularly tamper-proof.

SCHMERSAL

SAFETY RATED LIMIT SWITCHES

Series	PS116	PS215	PS216	PS226	PS315	PS316
Housing	Metal head Thermoplastic body	Metal	Thermoplastic	Thermoplastic	Metal	Thermoplastic
IP Rating	IP66, IP67	IP66, IP67	IP66, IP67	IP66, IP67	IP66, IP67	IP66, IP67
Dimensions (inches)	1.22 | 0.6 | 2.24	1.2 | 1.3 | 2.6	1.2 | 1.3 | 2.6	2.3 | 1.3 | 2.2	1.5 | 1.4 | 3	1.5 | 1.4 | 3
Connections	M12 Connector Prewired cable	Screw terminals M12 Connector	Screw terminals M12 Connector	Screw terminals M12 Connector	Screw terminals M12 Connector	Screw terminals M12 Connector
Contact Options	1 NO & 1 NC 2 NO & 1 NC 1 NO & 2 NC 2 NC	1 NO, 2 NO 2 NC, 3 NC 1 NO & 1 NC 1 NO & 2 NC 2 NO & 1 NC	1 NO, 2 NO 2 NC, 3 NC 1 NO & 1 NC 1 NO & 2 NC 2 NO & 1 NC	1 NO, 2 NO 2 NC, 3 NC 1 NO & 1 NC 1 NO & 2 NC 2 NO & 1 NC	1 NO, 2 NO 2 NC, 3 NC 1 NO & 1 NC 1 NO & 2 NC 2 NO & 1 NC	1 NO, 2 NO 2 NC, 3 NC 1 NO & 1 NC 1 NO & 2 NC 2 NO & 1 NC
Features	10 Actuation heads Rotatable heads 45° steps	10 Actuation heads Rotatable heads 45° steps	10 Actuation heads Rotatable heads 45° steps	10 Actuation heads Rotatable heads 45° steps	7 Actuation heads Rotatable heads 45° steps	7 Actuation heads Rotatable heads 45° steps
Actuator types	**for PS116, PS215, PS216, PS226**			**for PS315, PS316**		

Position switches with safety function

Typically used to determine the position or presence of moving parts, work pieces, or conveyed materials, or to monitor the position of rotating or sliding machine guards, these limit switches can be utilized in automation, elevator, and safety applications. They are sealed to be dust tight and withstand strong water jets (IP66) and submersion in water (IP67), suitable for use in in adverse ambient conditions of industrial environments.

The actuator elements can be adjusted in the field: rotated to one of 8 positions - in 45° steps relative to the body; or replaced with other elements. With many actuator elements to choose from, they are easily adaptable to many applications.

KEY TRANSFER SYSTEM

Series	SHGV	SHGV/ESS21S2	SVE	SVM
Type	Guard Locking Device	Key Selector Switch	Multi-key Interlock	Key Distribution Station
Housing	Metal	Metal/Thermoplastic	Thermoplastic	Aluminum (box) Stainless Steel (plate)
IP Rating	IP65	IP65	IP65	IP65 (box) / IP40 (plate)
Connection	N/A	Screw Terminals	Screw Terminals	N/A
Contact Options	N/A	1NO & 1NC	Magnet: 1NO & 1NC Selector: 1NO & 1NC 1NO & 2NC	N/A
Features	1 or 2 locking barrels Double reset	Additional contacts Colored key grips	1, 2 or 3 selector switches	6 or 10 keys
Available as	⟨Ex⟩	⟨Ex⟩	⟨Ex⟩	⟨Ex⟩

With the SHGV-system, the trapped key determines whether the guard door can be opened or not. In the initial state, the trapped key is in a key-selector-switch which is usually located in a central control console where the stop function of the machine is. The key can only be removed from there when the machine is in the safe operating mode. The operator can then take the key from the console selector switch and insert it into the lock barrel of the guard door to open it. The key can only be removed from this lock barrel once safety door is closed and locked again.
The machine or the hazardous movement can be restarted once the key is back in the selector-switch at the central console.

If the transfer time between making a selection with the key-selector-switch (removal of the key) and the unlocking of the protection equipment is insufficient, then a solenoid locking key-selector switch unit (SVE) may be required. The SVE Interlock holds keys until a hazardous machine motion has come to a stop. Multiple guard doors can be controlled with a SVM key distribution station. The control key remains trapped as long as any secondary keys are removed / guard door are open.

Hazardous run-on time < Time for the key transfer

One key-selector-switch SHGV/ESS locks one moveable piece of protection equipment
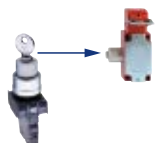
One key-selector-switch SHGV/ESS locks several moveable pieces of protection equipment using the key-distribution-station SVM
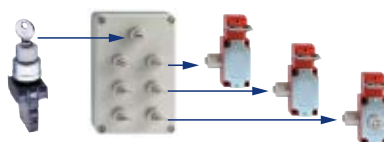
Hazardous run-on time > Time for the key transfer

A SVE key-selector-switch interlocking device locks up to 3 movable pieces of protection equipment depending on the run-on movements
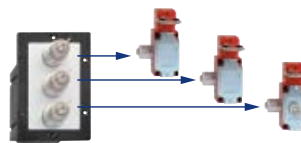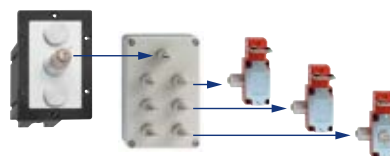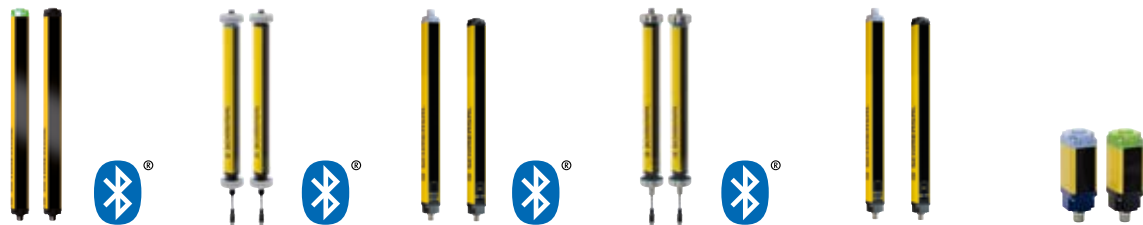
A SVE key-selector-switch interlocking device locks several movable pieces of protection equipment using the SVM key-distribution-station depending on the run-on movements

Schmersal

OPTOELECTRONIC SAFETY DEVICES

Series	SLC440COM	SLC440COM IP69	SLC440	SLC440 IP69	SLC445	SLB440
Profile	1" | 1.30"	2" Dia	1" | 1.30"	2" Dia	1" | 1.30"	1" | 1.30" | 3.6"
Resolution	14 mm, 30 mm, 35 mm	*	14 mm, 30 mm	*	14 mm, 30 mm	----
Protection heights	330 mm ... 1930 mm	330 mm ... 1770 mm *	170 mm ... 1930 mm	170 mm ... 1770 mm *	170 mm ... 1770 mm	----
Range	0.3 m ... 10 m	*	0.3 m ... 10 m	*	0.3 m ... 10 m	0.3 m ... 15 m
Functions	Start interlock LED end cap Bluetooth interface for SLC ASSIST App	**IP69 housing** Plastic Endcaps All SLC440COM functions apply including Bluetooth Interface	LED end cap 7 segment display Blanking Contactor control Beam Coding Start interlock Double reset High range (to 20M) Bluetooth interface	**IP69 housing** Stainless Steel or Plastic Endcaps All SLC440COM functions apply including Bluetooth Interface	LED end cap 7 segment display Muting Cyclic function Multiscan +SLC440 functions Complete muting sensor set available	Single beam LED end cap Start Interlock Beam Coding
IP Rating	IP67	**IP69**	IP67	**IP69**	IP67	IP67
Type 2 Version	SLC240COM	----	----	----	----	SLB240
Light Grid Version	SLG440COM 2, 3, or 4 beam	SLG440COM IP69 2, 3, or 4 beam	SLG440 2, 3, or 4 beam	SLG440 IP69 2, 3, or 4 beam	SLG445 2, 3, or 4 beam	----
Available as			ASi			High range to 75 m Heater for -30°C

* IP69 versions: The IP69 housing is a separate part number. A SLC/SLG 440 or SLC/SLG 440COM model must be ordered with the IP69 housing at time of order. Factory will only ship fully assembled, sealed units. Resolution, protection height, range, and functions are all subject of SLC/SLG chosen.

Safety light curtains

Safety Light Beams (SLB) provide a single infrared beam and Safety Light Grids (SLG) are 2, 3, or 4 beam systems, typically used for presence detection and perimeter guarding. Safety Light Curtains (SLC) are multiple beam arrays used in point of operation applications to detect hands (30mm resolution) or fingers (14mm resolution) in the protection field. Muting and blanking functions allow objects to pass through the protection field while still preventing personnel from accessing the hazardous area. Beam coding allows several devices to work in the same area without interfering with each other.
Safety Light Curtains and Grids with the Bluetooth Interface allow data transmission from the device to Android and iOS smartphones and tablets, accessible by the Schmersal SLC Assist App. An IP69 housing is available, for applications requiring high temperature or high pressure wash downs, typical in hygienic areas.
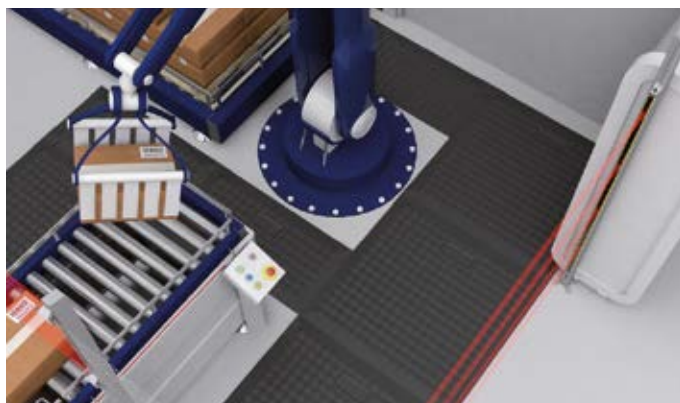
SAFETY MATS

Series	SMS4		SMS5	
Dimensions	250 mm x 500 mm 500 mm x 500 mm 500 mm x 1000 mm 750 mm x 1000 mm 1000 mm x 1000 mm 1000 mm x 1500 mm		250 mm x 500 mm 500 mm x 500 mm 500 mm x 1000 mm 750 mm x 1000 mm 1000 mm x 1000 mm 1000 mm x 1500 mm	
Mounting ramp edge	Separate		Integrated	
Accessories	Precut trim kits: SMS4-RS-250-500 SMS4-RS-500-500 SMS4-RS-500-1000 SMS4-RS-750-1000 SMS4-RS-1000-1000 SMS4-RS-1000-1500		----	
Safety Controller		SRB301HC, SRB-E-301ST		

Custom sizes, colors, and tread patterns are available.

Safety mats

Safety pressure mats are used to safeguard personnel around machinery with hazardous movement, such as wood processing machines, scissor lifts or punch presses. They provide a slip-free surface that is highly resistant to chemicals such as acids, caustic solutions, oil, and gasoline.

The safety pressure mat consists of two current-carrying thin steel plates separated by insulating strips. Applying pressure to the mat surface creates an electrical cross-wire short between the steel plates. The connected safety controller evaluates this signal and stops the hazardous movement.

SCHMERSAL

SAFETY EDGES

Series	SE 40	SE 70
Dimensions	1" wide, 1.5" high	1.18" wide, 2.3" high
Length	SE-P40-1250 = 1,250 mm SE-P40-2500 = 2,500 mm SE-P40-5000 = 5,000 mm SE-P40-10000 = 10,000 mm	SE-P70-1250 = 1,250 mm SE-P70-2500 = 2,500 mm SE-P70-5000 = 5,000 mm SE-P70-10000 = 10,000 mm
Mounting rails	SE-AL10-1250 SE-AL12-1250	SE-AL20-1250 SE-AL22-1250
Additional Components	SE-T.40 end cap	SE-T.70 end cap
	SE-SET sensor set	
	SE-100C Safety Controller SE-304C Safety Controller SE-400C Safety Controller	

Safety edges

If there is a risk of crushing or piercing from automatically moving machine or machine parts, these areas can be secured using safety edges, for example, on lift tables, lifting platforms, or the lift gates of automated production plants, driverless transportation systems (DTS) and mobile shelving systems.

This system uses an infrared beam sensor set in the round channel at the top of the rubber profile. Deformation of the rubber profile interrupts/weakens the signal between the transmitter and receiver. This is sensed by the safety controller, disabling the outputs to signal the hazardous movement to stop.

SAFETY LASER SCANNER

HOKUYO

ACCESSORIES

Extension cables (T301)
| UAM-5C10 | 10 meter cable |
| UAM-5C20 | 20 meter cable |

Extension cables (T301C)
UAM-5C02C	2 meter cable
UAM-5C05C	5 meter cable
UAM-5C10C	10 meter cable
UAM-5C20C	20 meter cable

Mounting brackets
UAM-BK03	Base mounting bracket
UAM-BK04	Rear mounting bracket
UAM-BK05	Cover bracket

Additional accessories
| UAM-W002 | Replacement lens |
| UAM-ENET | Ethernet cable, 3 meters |

| Part Number	UAM-05LP-T301	UAM-05LP-T301C
Dimensions (inches)	3.75 x 3.15 x 3.15	3.75 x 3.15 x 3.15
Range	270 degree detection angle 5 meter protection zone 20 meter warning zone	270 degree detection angle 5 meter protection zone 20 meter warning zone
Connection	3 meter cable, flying leads	300 mm cable, with connector
IP rating	IP65	IP65
Features	Dual protection zone mode Configuration Software Ethernet communication Master/slave	Dual protection zone mode Configuration Software Ethernet communication Master/slave

Safety Laser Scanners are presence sensing devices, also known as active opto-electronic protective devices responsive to diffuse reflection (AOPDDR). Safety Laser Scanners are one of the most effective presence sensing technologies as they can cover a wider area than compared to other solutions. The safety monitoring area generally comprises a wide warning zone and a narrower protection zone.

Here are typical applications:
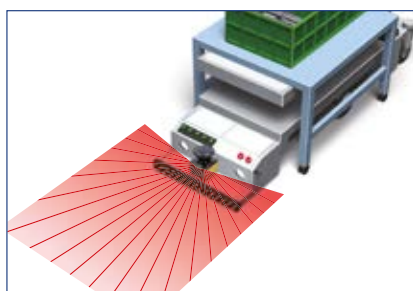
COLLISION AVOIDANCE
Switching between 32 safe zone sets enables collision avoidance for AGVs
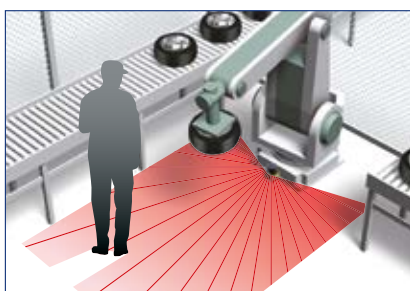
PRESENCE DETECTION
Detection of persons or objects entering the safety zone

ACCESS CONTROL
Arm and hand protection for critical safety zones in the work area, for example during insertion or placement work

SCHMERSAL

CONTROL DEVICES WITH SAFETY FUNCTION

NEW

Series	ZSD	TFH	SEPK / SEPG	BDF40	BDF200	BDF100
Type	Enabling Device	Safety Foot Switch	Two Hand Control	Control Panel	Control Panel	Control Panel
IP Rating	IP65	IP65	IP65	IP65	IP65	IP65
Features	Off-On-Off switch Optional top button	Off-On-Off switch Hooded housing 2 pedal version Reset button	Plastic or metal housing Custom versions Stands available	Up to 4 controls Plastic housing E-Stop, pushbuttons, and indicator lights	Up to 4 controls Plastic housing Wide variety of control elements	Single operator Plastic housing Wide variety of control elements
Available as				AS-i **SD**		

Enabling switches

Enabling switches are used – perhaps together with other safety measures to provide personal protection in potentially hazardous environments where the special operating modes of a machine necessitate partial or complete removal of the safety guards. The current Machinery Directive (2006/42/EC) as well as diverse product-specific EC standards specially underline how machine operation can be simplified.

Safety foot switches

Safety foot switches are used as enabling devices for machines and systems where, for example, manual operation is not possible. The main application areas are machines in the metal working industry. The safety foot switch uses an off-on-off switching condition. Initiate the workflow by stepping on the foot pedal to the pressure point. Now the machine process will run until you either step off the pedal or step further down on the pedal, past the pressure point. Stepping down fully will latch the pedal, until manually reset.

Two-hand control panels

Two-hand control panels belong to the family of non-separating protective equipment. In general, they serve to ensure the machine operator's hands are located on the control panel when the control signal for a hazardous movement is issued. These command devices thus ensure the operator is not in the way of dangerous moving parts when a machine or plant is started.

Control panels

BDF products are enclosed in a high quality slimline housing made from shock-resistant plastic and are easily attached to the machine's commercially available aluminium profile system, with space for up to four operating controls. The user can choose from a large product portfolio of illuminated control push buttons, selector switches, LED illuminated indicators, key-operated switches and standard-compliant Emergency-Stop command devices.

EMERGENCY CABLE PULL SWITCHES

NEW

Series	ZQ700	ZQ215 / ZQ315	ZQ900	T3Z068	RS655 / RS656
Housing	Thermoplastic	Metal / Thermoplastic	Metal	Metal	Cast Iron / Thermoplastic
IP Rating	IP67	IP67	IP65, IP67	IP65	IP66, IP67
Dimensions (inches)	1.6 | 1.6 | 6.3	(215) 1.25 | 3.6 | 1.22 (315) 1.45 | 3.6 | 1.57	2.8 | 8.6 | 3.8	7.1 | 7 | 4.5	7.4 | 4.1 | 4.7
Connections	Screw Terminals	Screw Terminals	Screw Terminals	Screw Terminals	Screw Terminals
Contact Options	1 NO & 1 NC 2 NC	2 NC 1 NO / 1 NC 1 NO / 2 NC	1 NO & 1 NC 2 NO & 2 NC 1 NO & 3 NC 2 NC, 4 NC	1 NO & 1 NC 2 NO & 2 NC 3 NO & 3 NC	2 NO & 2 NC
Max cable length	10 meters	25 meters	75 meters	50 meters (both directions)	100 meters (both directions)
Features	Reset button	Pull to Left (L) or Right (R) versions	Reset button Optional E-stop button	Bi-Directional Pull ring or key reset	Bi-Directional Reset button Optional DuplineSafe
Available as			⟨Ex⟩	⟨Ex⟩	⟨Ex⟩ RS655 only

ACCESSORIES
(complete custom kits or order installation components separately)

Wire rope	Eyebolt	Tension Spring	Wire clamp	Tensioner Turnbuckle	Thimble	S900 Tensioner	Shackle

Pull-wire emergency stop switches

For machine parts which can't be protected using safety covers, pull-wire Emergency-Stop switches with their "extended arm" offer an excellent alternative to Emergency-Stop buttons. The advantage of pull-wire switches over mushroom head Emergency-Stop push buttons is that the Emergency-Stop command can be triggered anywhere along the wire.

Schmersal emergency cable pull switches feature the required reset function, double-break contact blocks offering a choice of several contact variations, optional integrated E-Stop palm button and the required means of tension monitoring. Once the trip wire is tensioned, the switch will initiate an emergency shutdown if an operator falls into, is pulled into, or pulls on the trip wire and will also fail to safe if the cable is cut or goes slack.

EMERGENCY STOP BUTTONS

Series	EDRRZ40RT	EDRRS40RT	RDRZ45RT	NDRZ50RT	ADRR40RT	E-STOP 201	NAS311ST1-AS
Material	Metal	Metal	Metal	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic
IP Rating	IP65	IP65	IP65	**IP69K**	IP65	IP65	IP65
Type	Button only Separate contacts	Button only Separate contacts	Button only Separate contacts	Button only Separate contacts	Button only Separate contacts	Complete kit with contacts and housing	Complete, M12 connector for AS-I
Reset	Pull	Keyed	Pull	Pull	Pull	Pull	Pull

ACCESSORIES

Yellow label:

NDP-65   Plastic foil sticker, yellow **(IP69)**
NDP-70   V2A plate, yellow **(IP69)**
NDP-70ES V2A plate, yellow, with text "EMERGENCY STOP" **(IP69)**
MDP-8   Metal plate, yellow

Enclosures

MBKAC311YE   plastic, yellow cover
MBGAC311YE   metal, yellow cover

Emergency stop buttons

These command and signalling devices are very important for man-machine interfaces in industrial applications. They are typically used in control cabinets, control panels, two-hand control panels, elevator construction or conveyor and material handling plants. When manually triggered, the devices initiate the switching off procedure.

Emergency stop button requirements include a red colored mushroom button with latching function (twist or pull to reset) mounted on a yellow background or housing.

SPECIAL APPLICATIONS

IP69 / IP69K Rated for wash down applications

Schmersal offers an ever increasing range of products designed to be dust tight and withstand the harsh conditions of high pressure (to 1450 psi) and high temperature (to 175deg F) wash downs prevalent in hygienic applications.

Electronic Solenoid Lock
AZM300
AZM40

Safety Light Curtain
SLC440COM
SLC440

Safety Sensor
BNS40S
BNS16
CSS30S
RSS36 ST

Joysticks
RK / NK

Controls
Pushbuttons
E-Stop
Signal lights
Selector switches
Step switch
Potentiometer dial
Main switch

EX for explosive applications

Areas with potentially explosive atmospheres due to the presence of gas and dust need special components that will not ignite a fire or explosion. Schmersal offers a diverse range of intrinsically safe components, EX rated for use in Zones 1, 2, 21, and 22.

Keyed Interlock
EX-AZ16
EX-AZ415
EX-AZ3350

Solenoid Interlock
EX-AZM161
EX-AZM170
EX-AZM415

Safety Controllers
SRB-101EXI
SRB-200EXI

Safety Light Curtains
EX-SLC440

Safety Sensor
EX-BN20
EX-BNS120
EX-BNS180
EX-BNS303
EX-BNS33
EX-BNS250
EX-BNS40S
EX-CSS180

Emergency Cable Pull
EX-T3Z068
EX-ZQ900
EX-RS655

Limit switches
EX-T/Z235
EX-T/Z335
EX-M330
EX-441 Belt Alignment
EX-441 Slack Wire

Pushbuttons
EX-R Series

Trapped key system
EX-SHGV

Hinged
EX-TV.S335

EX Products

AS-I Integrated

AS-Interface Safety at Work is a safety bus system based upon the open standard of AS-International. It is a simple yet flexible solution to quickly, efficiently and cost-effectively integrate a vast safety system. Schmersal offers a wide variety of safety devices with integrated AS-I:

Keyed Interlock
AZ16 AS
AZ201 AS

Electronic Solenoid Lock
MZM100 AS
AZM201 AS
AZM300 AS

Solenoid Interlock
AZM161 AS
AZM170 AS

Safety Light Curtain
SLC440 AS

Controls
BDF200 AS
NAS311 AS (E-Stop)

Safety Sensor
BNS260 AS
BNS36 AS
BNS16 AS
RSS260 AS
RSS36 AS

AS-I Products

Safe solutions for your industry

Schmersal presents a series of guides featuring a selection of Schmersal safety products which are suitable to meet the unique challenges in various industries. Check our website or contact your local Schmersal representative for more information on Industry Solutions.

Food & Beverage
Machine Tools
Intralogistics / Warehousing

Packaging
Elevators & escalators
Robotics

Wood processing
Heavy industry
Automotive

For more information, check our Online Product Catalog: products.schmersal.com/en_US

SCHMERSAL

GUARDING SYSTEMS

SATECH
Modular **Machine Guards**

Overview

Schmersal is proud to partner with SATECH to provide guarding solutions

- Modular system based on framed panels and connection systems
- Custom design for each application. 3D model and parts list provided.
- Easy field modifications

- Installs quickly and easily
- Rugged, steel construction
- Full line of accessories include access doors, kick plates, and supports.

FastGuard

Designed for Speed of installation
The Machine Guard with the quickest assembly. The Machine Guard with no posts for up to less 70 % assembly time. Ideal for the partitioning of areas and for conveyor belts on automatic lines.

EasyGuard

Designed for Handiness
The best-selling framed Machine Guard. The Machine Guard that is simple and effective, ideal for most industrial applications. Two smooth-surface post options, a new welded baseplate and practical Clamp assembly.

ImpactGuard

Designed for Robustness
The robust Machine Guard, ideal for heavy-duty applications. The assembly with captive retained screws and the new baseplates make for a sturdy structure, able to absorb impacts from the inside up to 2200 J.

Engineering Services

tec.nicum offers product- and manufacturer-neutral consultation on important matters relating to machine safety and work protection. Our TÜV Certified Functional Safety Engineers for Machinery can plan and realize complex solutions for safety around the world in close collaboration with clients.

tec.nicum
Schmersal Group

tec.nicum services cover six areas, which can be obtained as individual modules or as complete packages:

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** (AI 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