

SHS Hinged Safety Switches

Combines the hinge and safety functions in one unit



SHS Series
Metal Body
With 1 Contact

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Safety Hinge Switch – SHS



Protective hoods and safety guards on machines such as gates in safety gate systems are often pivot mounted with hinges.

BERNSTEIN presented the world's first safety hinge switch in 2002, offering the innovative SHS series, which combines a hinge and safety switch in one functional unit.

The design of the SHS safety hinge switch has been updated to work cohesively with aluminum extruded rail systems. Its shallow depth, even when fully opened, makes it ideally suited for use in tight installation conditions on machines. Safety doors and gates are often subject to high mechanical stresses, which can cause them sag, leading alignment issues with standard keyed switches. With the SHS switches the safety guards are monitored directly from the hinge.

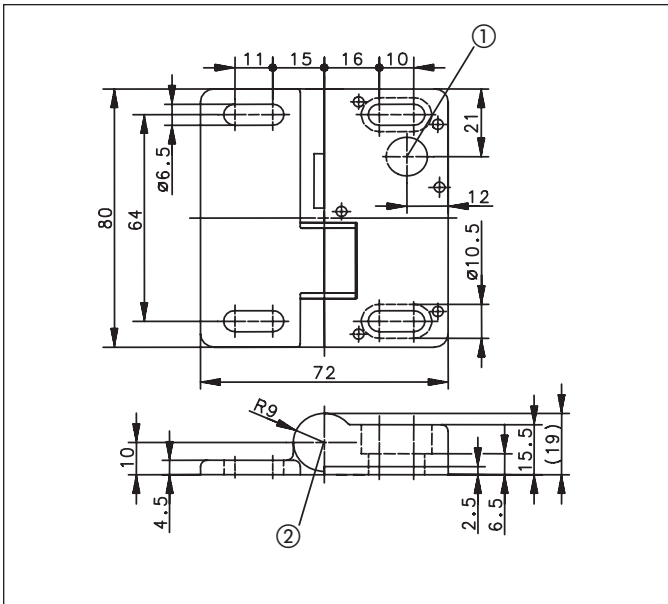
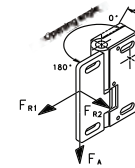


Illustration showing fixed pin and shearing bolt sheared off.

The concealed components of the safety switch provides a high degree of protection against tampering. In addition, units with a back connection allow the cable to be completely hidden in the door frame preventing unauthorized access. The SHS hinge switch provides maximum anti-tamper protection as, once set, the switching point can no longer be changed.

Safe:

- 2 SHS hinge switches, each equipped with a positively opening safety contact, allows you to configure a system up to performance level PLe



Flexible:

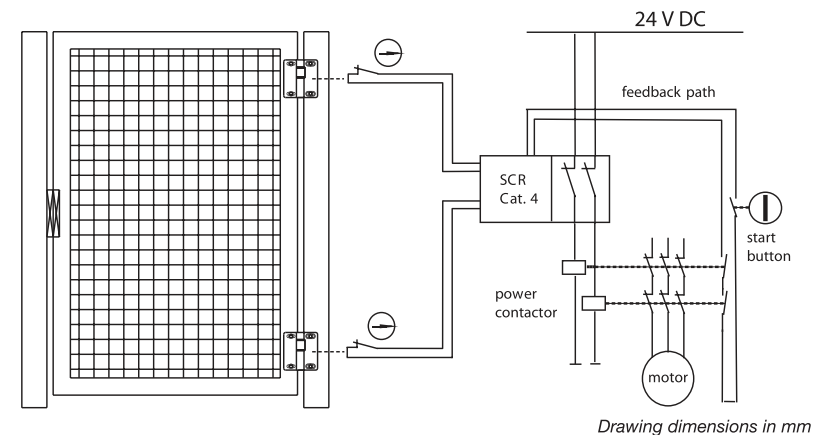
- The angle range extends from 0 to 225°
- A safety device ensures positive activation after the switch has been set
- In addition to the plug connection version, an SHS with fixed cable connection from the back or pivot point is also available

Fast:

- Plug connector and fixed cable connections are available for axial and radial (rear) connection
- An AC/DC version (up to 250 V) or a DC version (up to 60 V) is available, depending on the configuration of the safety circuit

Reliable:

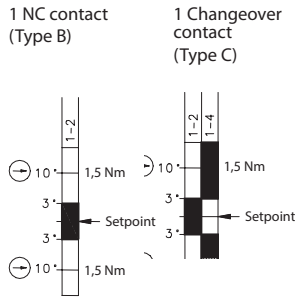
- A pressure die-cast zinc enclosure allows versatile use of the SHS switch in varied applications
- When used as a load bearing hinge, the SHS takes up loads of up to 750 N in axial direction and 1000 N in radial direction after the switching point has been finally set
- The protection rating is IP67



SHS Hinged Safety Switches

Combines the hinge and safety functions in one unit

Switching diagram

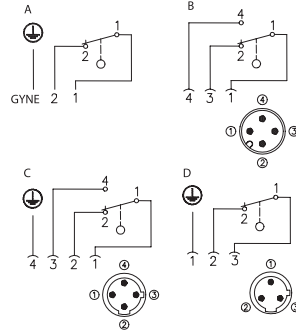


Setting point freely selectable in range from 0°... 225°

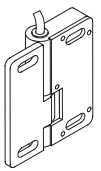
Tolerances:
Switching angle (opening) +2.0°/-1.5°
Positive opening torque 10 %
Positive opening angle +0.5°/-3°

Switching angle hysteresis (closing of normally-closed contact -1.0°) from typical hinge switch-off point

Connection drawing

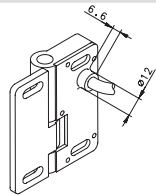


Connection variant 1



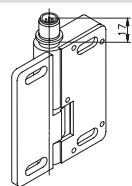
Cable, PVC

Connection variant 2



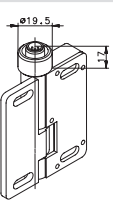
Cable, PVC

Connection variant 3



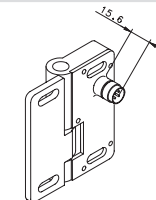
Connector M12 x 1, metal thread

Connection variant 4



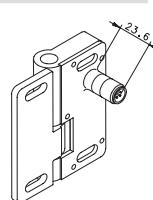
Connector M12 x 1, metal thread with anti-tamper facility

Connection variant 5



Connector M12 x 1

Connection variant 6



Connector M12 x 1

Product selection

Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	Connection variant		Required cable coupling / type	Remarks
					radial (back)	number axial (bottom)		
6019261011	SHS-A1Z-KA 5	1NC	230 V	AC/DC	1	Cable		BG approval
6019261014	SHS-A1Z-KR 5	1NC	230 V	AC/DC	Cable	2		BG approval
6019261017	SHS-A1Z-SA-BG	1NC	230 V	AC/DC	4	M12	A	BG approval
6019261018	SHS-A1Z-SR-BG	1NC	230 V	AC/DC	M12	6	A	BG approval
6019261009	SHS-A1Z-SA	1 Changeover contact	230 V	AC/DC	3	M12	C	
6019261010	SHS-A1Z-SR	1 Changeover contact	60 V	DC	M12	5	B	
6019261015	SHS-A1Z-SA	1 Changeover contact	60 V	DC	3	M12	B	
6019261016	SHS-A1Z-SR	1 Changeover contact	230 V	AC/DC	M12	6	C	
6019291013	SHS-OZ							Blank hinge

Technical data

Electrical data

Rated insulation voltage	U _i	250 V
Rated surge voltage strength		2.5 kV
Thermal current		3 A
Rated operating voltage	U _e	230 V AC; 60 V DC
Utilization category		AC-15, 230 V AC/1.5 A;
Positive opening	⊕	conforming to IEC/EN 60947-5-1, Addendum K
Short-circuit protection		Fuse 4 A gL/gG

Mechanical data

Switch	GD-Zn
Ambient temperature	-25°C to + 70°C (Connection cable installed)
Mechanical service life	10 ⁶ switching cycles
B10d	2 mill.
Switching frequency	max. 1200 switching cycles/hour
Mounting	4x M6 screws DIN 7984 or DIN 6912
Type of connection	Fixed connection cable, 3 x 0.5 mm ² x 5 m (AWG20), minimum bending radius = 25 mm
Weight	approx. 0.7 kg (cable variant) approx. 0.4 kg (connector and blank hinge variant)
Installation position	Any
Protection class	IP67 as per IEC/EN 60529
Switching angle	± 3° from setting point
Positive opening angle	± 10° from setting point
Positive opening torque	1.5 Nm
Mechanical load	F _{R1} = max. 1000 N, F _{R2} = max. 500 N, F _A = max. 750 N

Standards

VDE 0660 T100, DIN EN 60947-1, IEC 60947-1
VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1

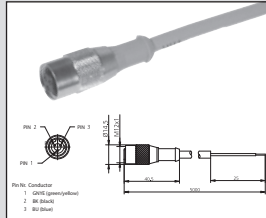
SHS Hinged Safety Switches

SHS Cable Type A

Article number	Designation	Cable length	Connector type	Number of pins	Special feature
3251103234	AN-KAB.SH5 5M AC STRAIGHT	5 m	Straight	3	AC/DC BG version
3251103236	AN-KAB.SH5 5M AC ELBOW	5 m	Elbow	3	AC/DC BG version

Contact assignments, AC/DC versions

- 1 = Green/yellow
- 2 = Black
- 3 = Blue



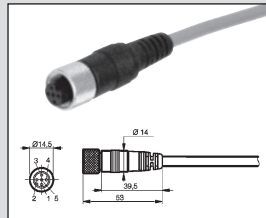
Core insulation / sheathing material:	PVC (UL)/PVC (UL)
Moulding / contact carrier material:	PUR (UL)/PUR (UL)
Max. rated voltage:	300 V AC
Max. current carrying capacity:	3 A
Min. / max. temperature range:	-25 °C / +70 °C
	-13 °F / +158 °F
Cable configuration mm ² :	3 x 0.5
Protection class when assembled:	IP67

SHS Cable Type B

Article number	Designation	Cable length	Connector type	Number of pins	Special feature
3251003221	AN-KAB.SH5 2M DC STRAIGHT	2 m	Straight	3	DC approval
3251003222	AN-KAB.SH5 5M DC STRAIGHT	5 m	Straight	3	DC approval
3251003223	AN-KAB.SH5 10M DC STRAIGHT	10 m	Straight	3	DC approval
3251003224	AN-KAB.SH5 2M DC ELBOW	2 m	Elbow	3	DC approval
3251003225	AN-KAB.SH5 5M DC ELBOW	5 m	Elbow	3	DC approval
3251003226	AN-KAB.SH5 10M DC ELBOW	10 m	Elbow	3	DC approval

Contact assignments, DC versions

- 1 = Brown
- 2 = -
- 3 = Blue
- 4 = Black



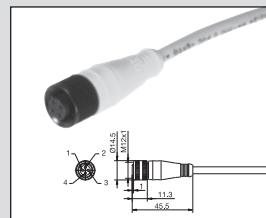
Core insulation / sheathing material:	PVC/PVC
Moulding / contact carrier material:	PUR/PUR
Max. rated voltage:	60 V AC/75 V DC
Max. current carrying capacity:	1.5 A
Min. / max. temperature range:	-25 °C / +70 °C
	-13 °F / +158 °F
Cable configuration mm ² :	3 x 0.34
Protection class when assembled:	IP67

SHS Cable Type C

Article number	Designation	Cable length	Connector type	Number of pins	Special feature
3251004219	AN-KAB.SH5 5M AC STRAIGHT	5 m	Straight	4	AC/DC-approval
3251004220	AN-KAB.SH5 5M AC ELBOW	5 m	Elbow	4	AC/DC-approval

Contact assignments, AC/DC versions

- 1 = Brown
- 2 = Black
- 3 = Blue
- 4 = Green/yellow



Core insulation / sheathing material:	PVC/PVC
Moulding / contact carrier material:	PUR/Nylon 6.6
Max. rated voltage:	300 V AC
Max. current carrying capacity:	4.0 A
Min. / max. temperature range:	-5 °C / +70 °C
	-13 °F / +158 °F
Cable configuration mm ² :	4 x 0.34
Protection class when assembled:	IP68