

**SHS Series**

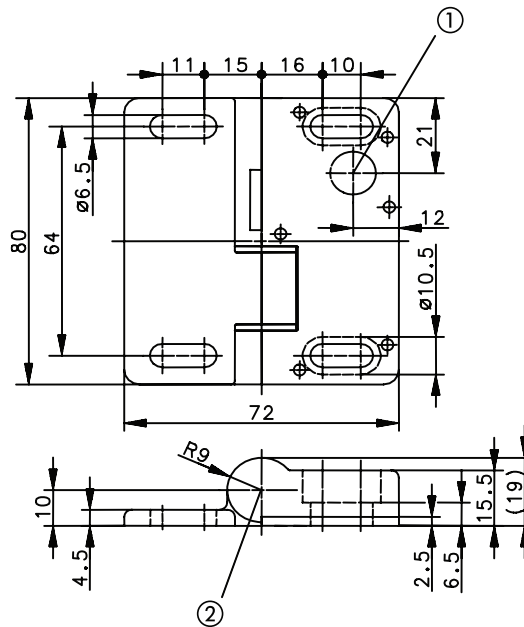


Illustration showing fixed pin and shearing bolt sheared off

- ① Position of connection variant 2, 5 and 6.
- ② Position of connection variant 1, 3 and 4.

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

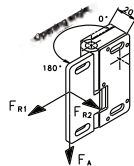
BERNSTEIN presented the world's first safety hinge switch in 2002, offering the innovative SHS series, which combines a hinge and safety switch in one functional unit.

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.

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:**

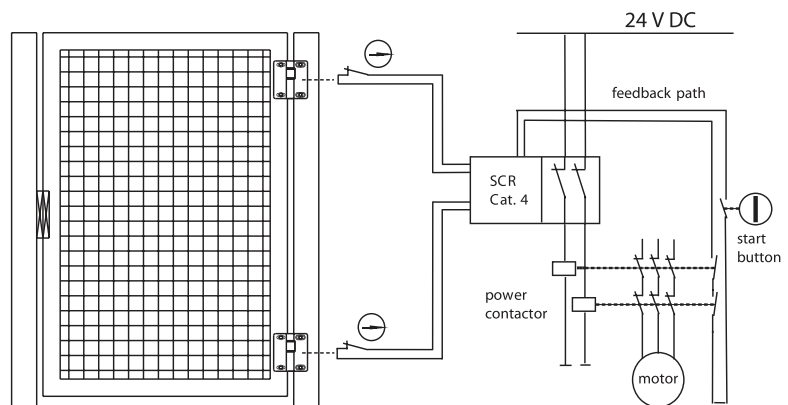
- The angle range extends from 0 to 225°
- A safety device ensures positive activation after the switch has been set
- In addition to the plug connection version, an SHS with fixed cable connection from the back or pivot point is also available

**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

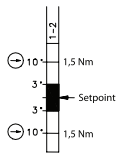


Drawing dimensions in mm

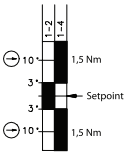
## SHS Series

### Switching diagram

1 NC contact  
(Type B)



1 Changeover contact  
(Type C)



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

Tolerances:

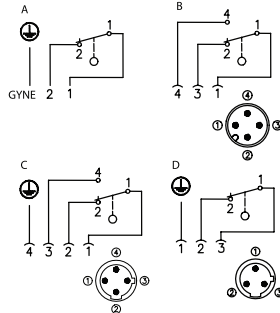
Switching angle (opening) +2.0°/-1.5°

Positive opening torque 10 %

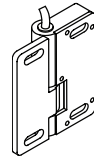
Positive opening angle +0.5°/-3°

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

### Connection drawing

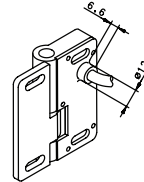


### Connection variant 1



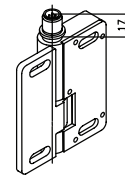
Cable, PVC

### Connection variant 2



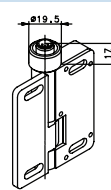
Cable, PVC

### Connection variant 3



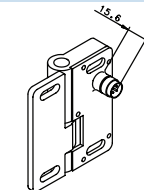
Connector M12 x 1,  
metal thread

### Connection variant 4



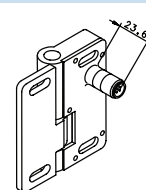
Connector M12 x 1,  
metal thread

### 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	Type of connection and direction radial	axial	Required cable coupling/type	Remarks
601.9261.011	SHS-A1Z-KA 5	1NC	230 V	AC/DC				BG approval
601.9261.014	SHS-A1Z-KR 5	1NC	230 V	AC/DC				BG approval
601.9261.017	SHS-A1Z-SA-BG	1NC	230 V	AC/DC		M12	A	BG approval
6019261018	SHS-A1Z-SR-BG	1NC	230 V	AC/DC		M12	A	BG approval
601.9261.009	SHS-A1Z-SA	1 Changeover contact	230 V	AC/DC		M12	C	
601.9261.010	SHS-A1Z-SR	1 Changeover contact	60 V	DC		M12	B	
601.9261.015	SHS-A1Z-SA	1 Changeover contact	60 V	DC		M12	B	
601.9261.016	SHS-A1Z-SR	1 Changeover contact	230 V	AC/DC		M12	C	
6019291013	SHS-OZ							Blank hinge

### Technical data

Electrical data		
Rated insulation voltage	$U_i$	250 V
Rated surge voltage strength	$U_{imp}$	2.5 kV
Thermal current	$I_{the}$	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	p	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 <sup>9</sup> 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 <sup>2</sup> 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		

Drawing dimensions in mm

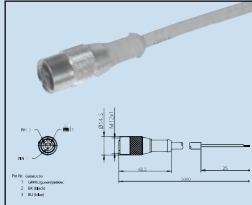
## SHS Series

### SHS Cable Type A

Article number	Designation	Cable length	Connector type	Number of pins	Special feature
<b>325.1103.234</b>	AN-KAB.SH5 5M AC GERADE	5 m	Straight	3	AC/ DC BG version
<b>325.1103.236</b>	AN-KAB.SH5 5M AC WINKEL	5 m	Elbow	3	AC/ DC BG version

### Contact assignments, AC/DC versions

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



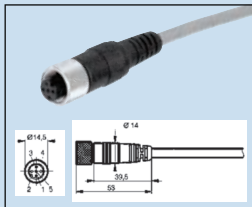
Core insulation/sheathing material:	PVC (UL)/PVC (UL)
Molding/contact carrier material:	PUR (UL)/PUR (UL)
Max. rated voltage:	300 V AC
Max. current carrying capacity:	3 A
Min./max. temperature range:	-25 °C/+70 °C -13 °F/+158 °F
Cable configuration mm <sup>2</sup> :	3 x 0.5
Protection class when assembled: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

### SHS Cable Type B

Article number	Designation	Cable length	Connector type	Number of pins	Special feature
<b>325.1003.221</b>	AN-KAB.SH5 2M DC STRAIGHT	2 m	Straight	3	DC approval
<b>325.1003.222</b>	AN-KAB.SH5 5M DC STRAIGHT	5 m	Straight	3	DC approval
<b>325.1003.223</b>	AN-KAB.SH5 10M DC STRAIGHT	10 m	Straight	3	DC approval
<b>325.1003.224</b>	AN-KAB.SH5 2M DC ELBOW	2 m	Elbow	3	DC approval
<b>325.1003.225</b>	AN-KAB.SH5 5M DC ELBOW	5 m	Elbow	3	DC approval
<b>325.1003.226</b>	AN-KAB.SH5 10M DC ELBOW	10 m	Elbow	3	DC approval

### Contact assignments, DC versions

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



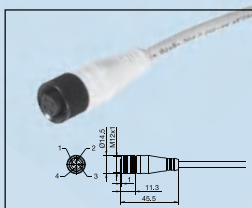
Core insulation/sheathing material:	PVC/PVC
Molding/contact carrier material:	PUR/PUR
Max. rated voltage:	60 V AC/75 V DC
Max. current carrying capacity:	1.5 A
Min./max. temperature range:	-25 °C/+70 °C -13 °F/+158 °F
Cable configuration mm <sup>2</sup> :	3 x 0.34
Protection class when assembled:	IP67

### SHS Cable Type C

Article number	Designation	Cable length	Connector type	Number of pins	Special feature
<b>325.1004.219</b>	AN-KAB.SH5 5M AC STRAIGHT E	5 m	Straight	4	AC/DC-approval
<b>325.1004.220</b>	AN-KAB.SH5 5M AC ELBOW E	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
Molding/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 <sup>2</sup> :	4 x 0.34
Protection class when assembled:	IP68