



## **Flexibility and Safety**

BERNSTEIN safety hinge switches

# Safety solutions for automation engineering



## Our expertise for your safety

In the field of industrial automation engineering, safety technology is becoming ever increasingly important. Stricter Health and Safety regulations intensifies the responsibility of the machine builder to protect the individual from the machine – our safety hinge switches offer a complete and safe solution to this need.

BERNSTEIN is one of the world's leading provider of industrial safety technology. We deliver solutions in the lift, construction, automotive, plant/machinery construction, and of course automation engineering.

## BERNSTEIN safety hinge switches



### Advantages of safety hinge switches in comparison to traditional door contacts

- Easy to install and tamper-resistant
- No actuator necessary
- Reliably operating
- Little risk of injury

# Safety Switches for Hinged



## SHS Safety hinge switches

- Die-cast zinc metal housing
- 1 positive opening safety contact
- Safety device ensures positive locking after the switch has been set



## SHS3 / Double hinge switch SHS3 Safety hinge switches

- Stainless steel hinge
- Freely and repeatedly adjustable switching point
- 2 positive opening safety contacts with additional normally-open signalling contact
- For arduous applications (Food & Beverage industry or heavy hinged protective equipment)
- Double hinge version with two switches available

## Protective Equipment



**SHS3 stainless steel  
version also with IP 69K**

### **SHS3Z Safety hinge switches**

- Die-cast zinc hinge
- Freely and repeatedly adjustable switching point
- 2 positive opening safety contacts with additional normally-open signalling contact
- For standard applications

# Stainless steel SHS3 / Die-cast zinc SHS3Z Safety hinge switch



## Safe

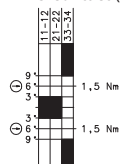
With suitable system layout, the switch can be used up to performance level e. Following variants are available:

- 2 positive opening safety contacts
- 2 positive opening safety contacts with additional normally-open signalling contact
- Integrated AS interface Safety at Work.

### Switching diagram

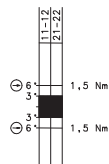
#### U15Z

2 NC contacts,  
1 NO contact (Zb)



#### A2Z

2 NC contacts (Zb)



## Fast

- Possibility of cable connection using Ultra-Lock technology

## Reliable

- IP 67
- Stainless steel version also with IP 69K
- Load-bearing hinge made from stainless steel or die-cast zinc
- Switching system housed in a high quality plastic enclosure





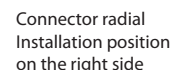
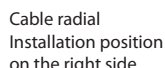
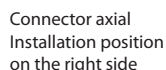
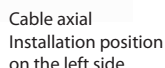
## Flexible

- Freely and repeatedly adjustable switching point
- Switching point freely adjustable by user over a range of 270°
- Uncomplicated re-adjustment even of set switching point by  $\pm 1.5^\circ$  thanks to integrated fine adjustment system
- Slots for mounting on sections and welded structures
- Plug connector and fixed cable connections are available for axial and radial (rear) connection
- Right and left hinged systems possible for optimum cable routing
- Mounting between sections while maintaining the required finger guard gap

## Double hinge

Thanks to its two switching elements on one hinge, the BG (occupational health and safety)-approved variant of the SHS3 provides two independently adjustable switching points.

This arrangement not only makes it possible to monitor the opening of a safety guard but also the direction of opening of swing doors. Of course, you have also all standard hinge switch advantages.






## Accessories

### SHS3 Cable Type D

Article number	Designation	Cable length	Connector type	Number of pins	Special feature
3251006291	AN-KAB.SH53 2M STRAIGHT	2 m	Straight	6	M12 BG version
3251006292	AN-KAB.SH53 5M STRAIGHT	5 m	Straight	6	M12 BG version
3251006293	AN-KAB.SH53 10M STRAIGHT	10 m	Straight	6	M12 BG version
3251006294	AN-KAB.SH53 2M ELBOW	2 m	Elbow	6	M12 BG version
3251006295	AN-KAB.SH53 5M ELBOW	5 m	Elbow	6	M12 BG version
3251006296	AN-KAB.SH53 10M ELBOW	10 m	Elbow	6	M12 BG version


### Contact assignments, AC/DC versions

	Core insulation/sheathing material:	PVC (Ø 5,6 mm)
	Moulding/contact carrier material:	PUR Elastollan R3000
	Max. rated voltage:	250 V AC
	Max. current carrying capacity:	2,5 A (at 70°C)
	Min./max. temperature range:	-5 °C to +105 °C (moved)
		-40 °C to +105 °C (moved firmly)
	Cable configuration mm <sup>2</sup> :	LiYwUL2517 6 x 0,34
	Protection class when assembled:	IP 68

### SHS3 Cable Type E

Article number	Designation	Cable length	Connector type	Number of pins	Special feature
3251004310	AN-KAB.SH53 4P 2M STRAIGHT	2 m	Straight	4	M12 BG version
3251004311	AN-KAB.SH53 4P 5M STRAIGHT	5 m	Straight	4	M12 BG version
3251004312	AN-KAB.SH53 4P 10M STRAIGHT	10 m	Straight	4	M12 BG version
3251004313	AN-KAB.SH53 4P 2M ELBOW	2 m	Elbow	4	M12 BG version
3251004314	AN-KAB.SH53 4P 5M ELBOW	5 m	Elbow	4	M12 BG version
3251004315	AN-KAB.SH53 4P 10M ELBOW	10 m	Elbow	4	M12 BG version

### Contact assignments, AC/DC versions

	Core insulation/sheathing material:	Heat resistant PVC UL 1731 / UL 2517 black
	Moulding/contact carrier material:	APEX 7500-85 / R3000 Elastollan R3000 neutral
	Max. rated voltage:	250 V
	Max. current carrying capacity:	4 A
	Min./max. temperature range:	At rest -25 °C to +105 °C
		Moved -5 °C to +105 °C
	Protection class when assembled:	IP 68

### Change kit for re-adjusting switching point

	Article number		Article number
	3991990161		1910000005
	SHS3 change kit containing:		Bit holder 1/4" flexible stem
	2 replacement caps		
	1 special bit		
	1 plastic ring		

## Technical Data SHS3/SHS3Z

- Rated insulation voltage  $U_i$  250 V
- Rated operating voltage  $U_e$  240 V AC ; 24 V DC
- Conv. thermal current  $I_{the}$  5 A (KA/KR) ; 4 A (SA/SR)
- Utilization category / switching capacity:  
AC-15, 230 V / 3 A ; DC-13, 24 V / 1 A
- Mechanical service life  $1 \times 10^6$  switching cycles
- Mechanical switching frequency max.  $\leq 300$ /h
- B10d:  $2 \times 10^6$  million
- Ambient temperature -25 °C to +70 °C  
(connection cable installed)
- Protection class IP 67 in accordance with IEC/EN 60529
- Mechanical load:  
Stainless steel:  $F_{R1} = \text{max. } 1800 \text{ N}$  ;  $F_{R2} = 750 \text{ N}$  ;  $F_A = 1800 \text{ N}$   
Die-cast zinc:  $F_{R1} = \text{max. } 1200 \text{ N}$  ;  $F_{R2} = 500 \text{ N}$  ;  $F_A = 1200 \text{ N}$

# Safety Hinge Switch SHS

## Safe

- System up to performance level e:  
2 SHS, each equipped with a positively opening safety contact

## Flexible

- The angle range extends from 0° to 225°
- Safety device ensures positive locking after the switch has been set
- Plug connector and fixed cable connections are available for axial and radial (rear) connection

## Fast

- AC/DC version (up to 250 V) or DC version (up to 60 V) available, depending on the configuration of the safety circuit

## Reliable

- Pressure die-cast zinc enclosure allows versatile use of the SHS switch in varied applications
- IP 67



### Switching diagram

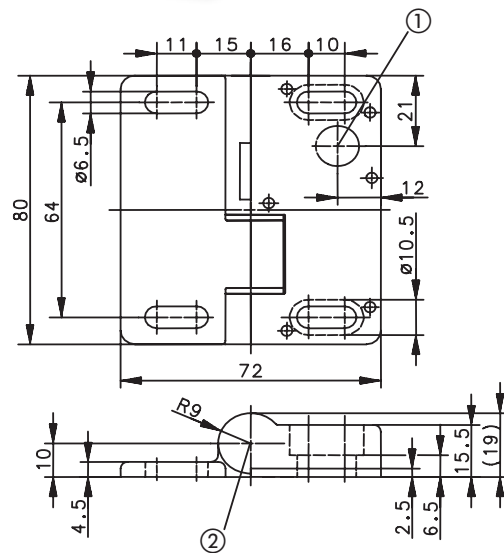
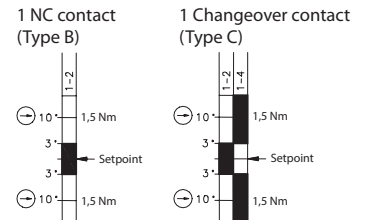
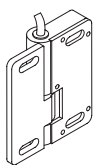


Illustration showing fixed pin and shearing bolt sheared off

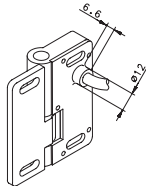
- ① Position of connection variant 2, 5 and 6.  
② Position of connection variant 1, 3 and 4.

### Connection variant 1



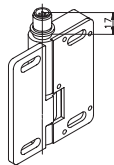
Cable, PVC

### Connection variant 2



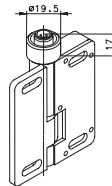
Cable, PVC

### Connection variant 3



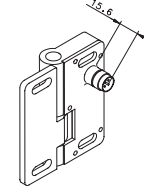
Connector M12 x 1, metal thread

### Connection variant 4



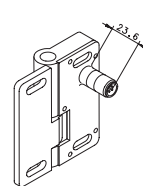
Connector M12 x 1, metal thread with anti-tamper facility

### Connection variant 5



Connector M12 x 1

### Connection variant 6



Connector M12 x 1

## Product selection

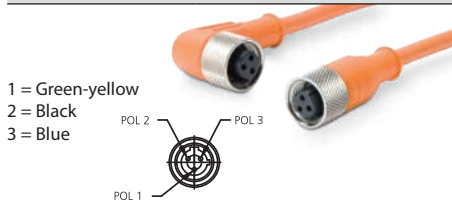
Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	radial	Connection variant	number	Required cable coupling / type	Remarks
6019261011	SHS-A1Z-KA 5	1 NC	230 V	AC/DC		Cable	1		BG approval
6019261014	SHS-A1Z-KR 5	1 NC	230 V	AC/DC	Cable		2		BG approval
6019261017	SHS-A1Z-SA-BG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

## Accessories

### 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

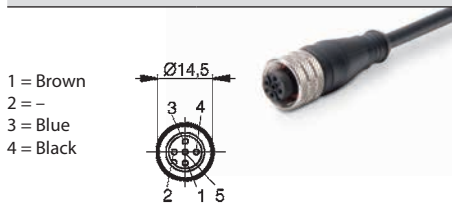


Core insulation/sheathing material:	PVC (UL)/PVC (UL)
Moulding/contact carrier material:	PUR (UL)/PUR (UL)
Max. rated voltage:	300 V AC
Max. current carrying capacity:	3 A
Min./max. temperature range:	-25 °C/+70 °C
	-13 °F/+158 °F
Cable configuration mm <sup>2</sup> :	3 x 0,5
Protection class when assembled:	IP 67

### 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

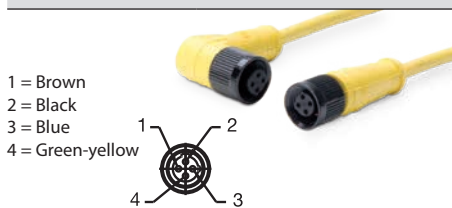


Core insulation/sheathing material:	PVC/PVC
Moulding/contact carrier material:	PUR/PUR
Max. rated voltage:	60 V AC/75 V DC
Max. current carrying capacity:	1,5 A
Min./max. temperature range:	-25 °C/+70 °C
	-13 °F/+158 °F
Cable configuration mm <sup>2</sup> :	3 x 0,34
Protection class when assembled:	IP 67

### 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



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 <sup>2</sup> :	4 x 0,34
Protection class when assembled:	IP 68

## Technische Daten SHS

- Rated insulation voltage  $U_i$  250 V
- Rated operating voltage  $U_e$  230 V AC ; 60 V DC
- Conv. thermal current  $I_{the}$  3 A
- Utilization category / switching capacity:  
AC-15, 230 V / 1,5 A ; DC-13, 60 V / 0,5 A
- Mechanical switching frequency max.  $\leq 1200/h$
- Mechanical service life  $1 \times 10^6$  switching cycles
- B10d:  $2 \times 10^6$  million
- Ambient temperature -25 °C to +70 °C  
(connection cable installed)
- Protection class IP 67 in accordance with IEC/EN 60529
- Mechanical load:  
 $F_{R1} = \text{max. } 1000 \text{ N}$  ;  $F_{R2} = 500 \text{ N}$  ;  $F_A = 750 \text{ N}$



**Switch systems –  
Economy meets safety**



**Sensor systems –  
Compact intelligence**



**Enclosure systems –  
Function and design**

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