



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

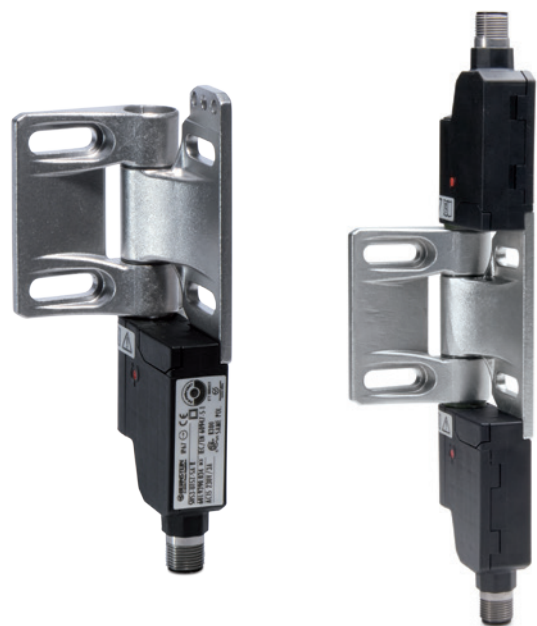
- Easy to install and tamper-resistant
- No actuator necessary
- Reliably operating
- Little risk of injury

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

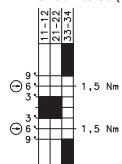
With suitable system layout, the switch can be used up to performance level e. Following variants are available:

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

Switching diagram

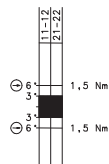
U15Z

2 NC contacts,
1 NO contact (Zb)



A2Z

2 NC contacts (Zb)

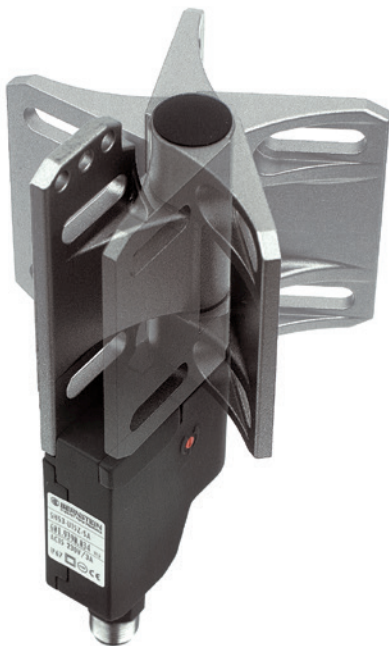


Fast

- 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



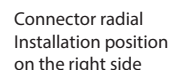
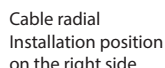
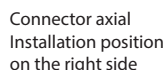
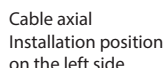
Flexible

- 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

 1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Grey 6 = Pink	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 ² :	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
3251004316	AN-KAB.SH53 4P U.L. 2M STRAIGHT	2 m	Gerade	4	Ultra Lock BG version
3251004317	AN-KAB.SH53 4P U.L. 5M STRAIGHT	5 m	Gerade	4	Ultra Lock BG version
3251004318	AN-KAB.SH53 4P U.L. 10M STRAIGHT	10 m	Gerade	4	Ultra Lock BG version
3251004319	AN-KAB.SH53 4P U.L. 2M ELBOW	2 m	Elbow	4	Ultra Lock BG version
3251004320	AN-KAB.SH53 4P U.L. 5M ELBOW	5 m	Elbow	4	Ultra Lock BG version
3251004321	AN-KAB.SH53 4P U.L. 10M ELBOW	10 m	Elbow	4	Ultra Lock BG version

Contact assignments, AC/DC versions

 1 = White 2 = Brown 3 = Blue 4 = Black	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 1×10^6 switching cycles
- Mechanical switching frequency max. ≤ 300 /h
- B10d: 2×10^6 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

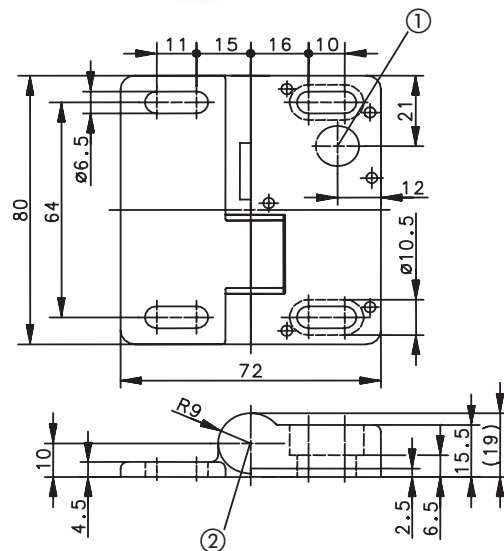
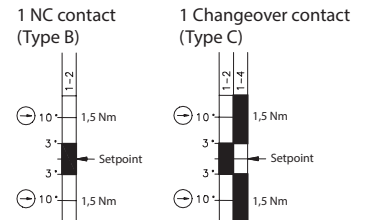
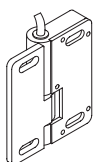


Illustration showing fixed pin and shearing bolt sheared off

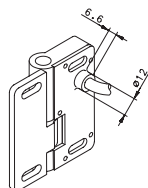
- ① Position of connection variant 2, 5 and 6.
- ② Position of connection variant 1, 3 and 4.

Connection variant 1



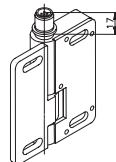
Cable, PVC

Connection variant 2



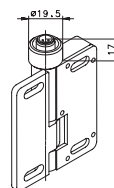
Cable, PVC

Connection variant 3



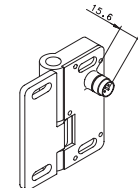
Connector M12 x 1, metal thread

Connection variant 4



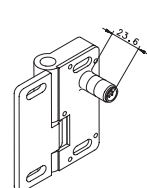
Connector M12 x 1, metal thread with anti-tamper facility

Connection variant 5



Connector M12 x 1

Connection variant 6



Connector M12 x 1

Product selection

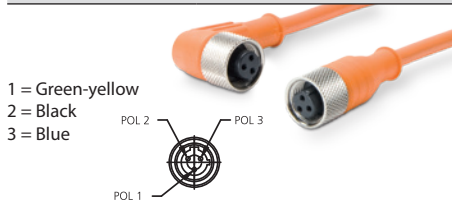
Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	radial	Connection variant	number	Required cable coupling / type	Remarks
6019261011	SHS-A1Z-KA 5	1 NC	230 V	AC/DC		Cable	1		BG approval
6019261014	SHS-A1Z-KR 5	1 NC	230 V	AC/DC	Cable		2		BG approval
6019261017	SHS-A1Z-SA-BG	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

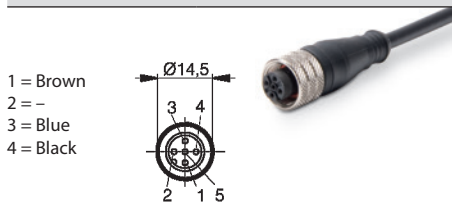


Core insulation/sheathing material:	PVC (UL)/PVC (UL)
Moulding/contact carrier material:	PUR (UL)/PUR (UL)
Max. rated voltage:	300 V AC
Max. current carrying capacity:	3 A
Min./max. temperature range:	-25 °C/+70 °C
	-13 °F/+158 °F
Cable configuration mm ² :	3 x 0,5
Protection class when assembled:	IP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

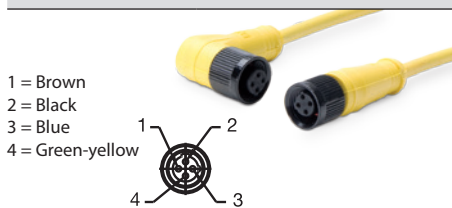


Core insulation/sheathing material:	PVC/PVC
Moulding/contact carrier material:	PUR/PUR
Max. rated voltage:	60 V AC/75 V DC
Max. current carrying capacity:	1,5 A
Min./max. temperature range:	-25 °C/+70 °C
	-13 °F/+158 °F
Cable configuration mm ² :	3 x 0,34
Protection class when assembled:	IP 67

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 ² :	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 1×10^6 switching cycles
- B10d: 2×10^6 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**

www.bernstein.eu

Contact

**International Headquarters
BERNSTEIN AG**
Hans-Bernstein-Str. 1
D-32457 Porta Westfalica
Phone +49 571 793-0
Fax +49 571 793-555
info@de.bernstein.eu
www.bernstein.eu

**Denmark
BERNSTEIN A/S**
Phone +45 7020 0522
Fax +45 7020 0177
info@dk.bernstein.eu

**France
BERNSTEIN S.A.R.L.**
Phone +33 1 64 66 32 50
Fax +33 1 64 66 10 02
info@fr.bernstein.eu

**Italy
BERNSTEIN S.r.l.**
Phone +39 035 4549037
Fax +39 035 4549647
info@it.bernstein.eu

**United Kingdom
BERNSTEIN Ltd**
Phone +44 1922 744999
Fax +44 1922 457555
info@uk.bernstein.eu

**Austria
BERNSTEIN GmbH**
Phone +43 2256 62070-0
Fax +43 2256 62618
info@at.bernstein.eu

**Switzerland
BERNSTEIN (Schweiz) AG**
Phone +41 44 775 71-71
Fax +41 44 775 71-72
info@ch.bernstein.eu

**Hungary
BERNSTEIN Kft.**
Phone +36 1 4342295
Fax +36 1 4342299
info@hu.bernstein.eu

**China
BERNSTEIN Safe Solutions
(Taicang) Co., Ltd.**
Phone +86 512 81608180
Fax +86 512 81608181
info@bernstein-safesolutions.cn