



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

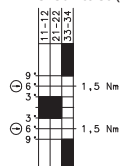
With suitable system layout, the switch can be used up to performance level e. Following variants are available:

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

Switching diagram

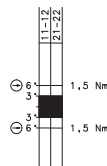
U15Z

2 NC contacts,
1 NO contact (Zb)



A2Z

2 NC contacts (Zb)

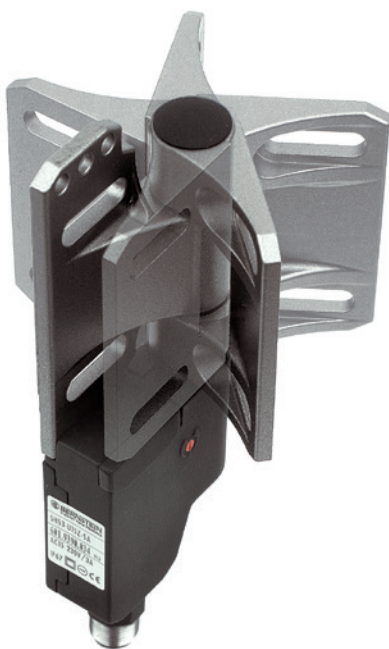


Fast

- 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



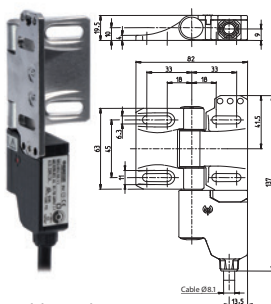
Flexible

- 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

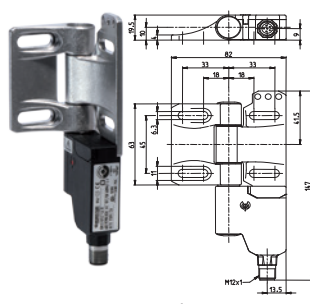
Double hinge

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.

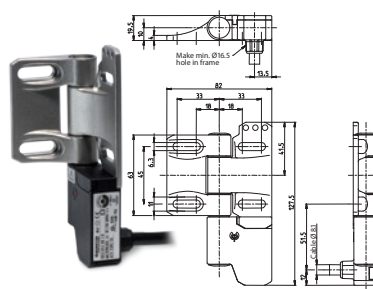
This arrangement not only makes it possible to monitor the opening of a safety guard but also the direction of opening of swing doors. Of course, you have also all standard hinge switch advantages.



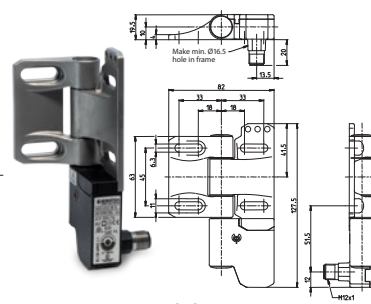
Cable axial
Installation position
on the left side



Connector axial
Installation position
on the right side



Cable radial
Installation position
on the right side



Connector radial
Installation position
on the right side

Product selection for die-cast zinc version

Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	Type of connection and direction	Required cable coupling / type	Mounting
					radial	axial	
6019490050	SHS3Z-U15Z-KA5 R	2Ö/1S	230 V	AC/DC		Cable	Right
6019490051	SHS3Z-U15Z-KA5 L	2Ö/1S	230 V	AC/DC		Cable	Left
6019490052	SHS3Z-U15Z-KR5 R	2Ö/1S	230 V	AC/DC	Cable		Right
6019490053	SHS3Z-U15Z-KR5 L	2Ö/1S	230 V	AC/DC	Cable		Left
6019490054	SHS3Z-U15Z-SA R	2Ö/1S	230 V	AC/DC		M12	Right
6019490055	SHS3Z-U15Z-SA L	2Ö/1S	230 V	AC/DC		M12	Left
6019490056	SHS3Z-U15Z-SR R	2Ö/1S	230 V	AC/DC	M12		Right
6019490063	SHS3Z-U15Z-SR L	2Ö/1S	230 V	AC/DC	M12		Left
6019490057	SHS3Z-U1Z-SA R	1Ö/1S	230 V	AC/DC		M12	Right
6019490058	SHS3Z-U1Z-SA L	1Ö/1S	230 V	AC/DC		M12	Left
6019490059	SHS3Z-U1Z-SR R	1Ö/1S	230 V	AC/DC	M12		Right
6019490060	SHS3Z-A2Z-SA R	2Ö	230 V	AC/DC		M12	Right
6019490061	SHS3Z-A2Z-SA L	2Ö	230 V	AC/DC		M12	Left
6019490062	SHS3Z-A2Z-SR R	2Ö	230 V	AC/DC	M12		Right
6019490049	SHS3Z-Hinge	(blank hinge)					Both sides

Product selection for stainless steel version

Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	Type of connection and direction	Required cable coupling / type	Mounting
					radial	axial	
6019390023	SHS3-U15Z-KA 5 L	2Ö/1S	230 V	AC/DC		Cable	Left
6019390022	SHS3-U15Z-KA 5 R	2Ö/1S	230 V	AC/DC		Cable	Right
6019390025	SHS3-U15Z-KR 5 L	2Ö/1S	230 V	AC/DC	Cable		Left
6019390024	SHS3-U15Z-KR 5 R	2Ö/1S	230 V	AC/DC	Cable		Right
6019390035	SHS3-U15Z-SA L	2Ö/1S	230 V	AC/DC		M12	Left
6019390034	SHS3-U15Z-SA R	2Ö/1S	230 V	AC/DC		M12	Right
6019390037	SHS3-U15Z-SR L	2Ö/1S	230 V	AC/DC	M12		Left
6019390036	SHS3-U15Z-SR R	2Ö/1S	230 V	AC/DC	M12		Right
6019390040	SHS3-A2Z-SA-R	2Ö	230 V	AC/DC		M12	Right
6019390041	SHS3-A2Z-SA-L	2Ö	230 V	AC/DC		M12	Left
6019390044	SHS3-A2Z-SR-R	2Ö	230 V	AC/DC	M12		Right
6019390042	SHS3-U1Z-SA-R	1Ö/1S	230 V	AC/DC		M12	Right
6019390043	SHS3-U1Z-SA-L	1Ö/1S	230 V	AC/DC		M12	Left
6019390045	SHS3-U1Z-SR-R	1Ö/1S	230 V	AC/DC	M12		Right
6019390046	SHS3-2-SA/2-SA	2 x 2Ö	230 V	AC/DC		M12	Both sides
6019390047	SHS3-5-SA/5-SA	2 x 1Ö/1S	230 V	AC/DC		M12	Both sides
6019390048	SHS3-7-KA5/7-KA5	2 x 1Ö/1S	230 V	AC/DC		Kabel	Both sides
6019390039	SHS3-7-SA/7-SA	2 x 1Ö/1S	230 V	AC/DC		M12	Both sides
6019390038	SHS3-Hinge	(blank hinge)					Both sides

Product selection for stainless steel version with IP 69K


Article number	Designation	Switching contact	Max. switching voltage	Type of voltage	Type of connection and direction	Required cable coupling / type	Mounting
					radial	axial	
6019390064	SHS3-U15Z-KA5-R-IPX	2Ö/1S	230 V	AC/DC		Cable	Right
6019390065	SHS3-U15Z-KA5-L-IPX	2Ö/1S	230 V	AC/DC		Cable	Left
6019390066	SHS3-U15Z-KR5-R-IPX	2Ö/1S	230 V	AC/DC	Cable		Right
6019390067	SHS3-U15Z-KR5-L-IPX	2Ö/1S	230 V	AC/DC	Cable		Left
6019390068	SHS3-7-KA5-IPX/ 7-KA5-IPX	2 x 1Ö/1S	230 V	AC/DC		Cable	Both sides

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

 <p>1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Grey 6 = Pink</p>	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

 <p>1 = White 2 = Brown 3 = Blue 4 = Black</p>	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


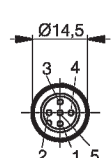

Change kit for re-adjusting switching point

	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. $\leq 300/h$
- 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: $F_{R1} = \text{max. } 1200 \text{ N}$; $F_{R2} = 500 \text{ N}$; $F_A = 1200 \text{ N}$

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					
 <p>1 = Green-yellow 2 = Black 3 = Blue</p>		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	
		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					
 <p>1 = Brown 2 = - 3 = Blue 4 = Black</p>		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	
		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					
 <p>1 = Brown 2 = Black 3 = Blue 4 = Green-yellow</p>		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	
		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**

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