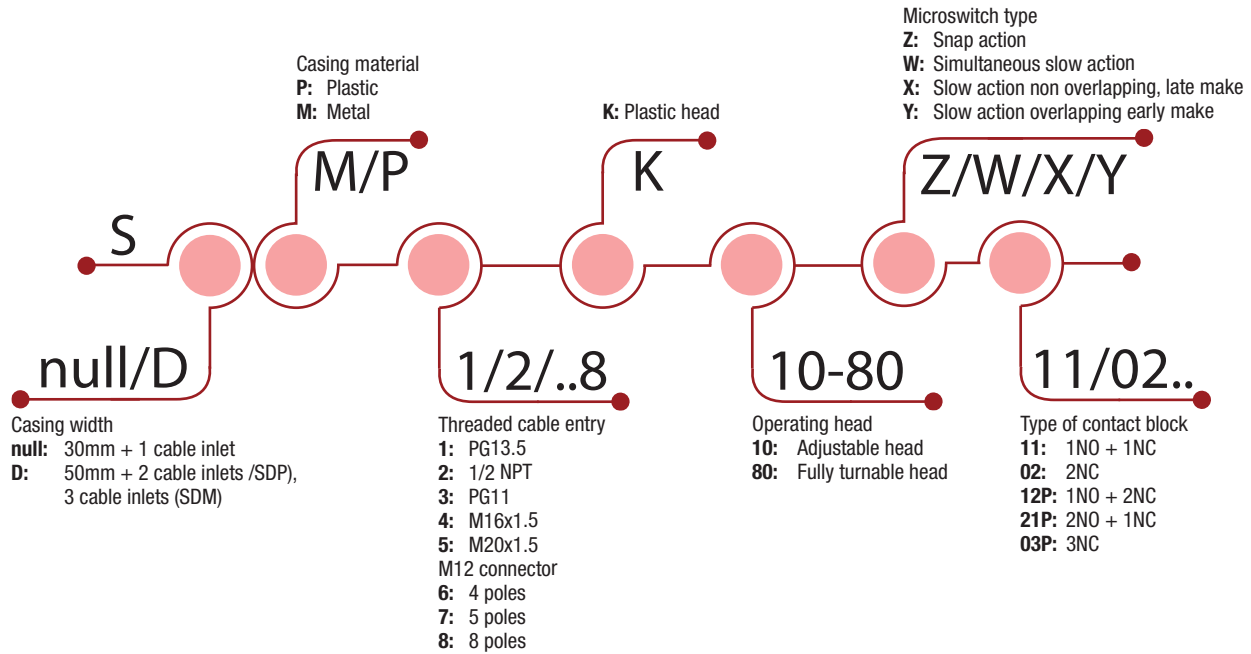


Safety Limit Switches

Safety Limit Switches with separate actuator

APPROVALS: UL 508 / CSA C22-2 N. 14



HOW IS IT MADE?

01 A variety of operating inox keys

- Flat / Bent
- Shock absorbing
- Adjustable

02 Fixed or turnable head

03 Casing

- SP/SM with dimensions acc. to EN 50047

04 Mounting screws

- 2 x M4 screws on top part for SP/SM series
- 2 or 4 x M4 screws on top part for SDP/SDM series

05 Cover

- 1 screw Ø3 pozidriv 1 for SP/SDP series
- 3 screws Ø3 pozidriv 1 for SM series
- 4 screws Ø3 pozidriv 1 for SDM series

06 Contact Block

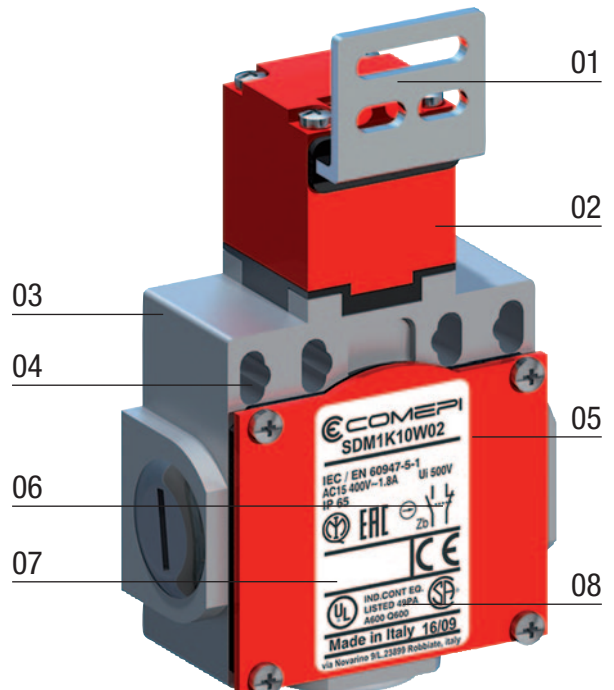
- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- 2 poles microswitch: M3.5 (+, -) pozidriv 2 screws
- 3 poles microswitch: M3 (+, -) screws
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standard

08 Electrical connection

- 1 x threaded cable inlet suitable for cable gland (SP/SM)
- 2 x threaded cable inlets suitable for cable gland (SDP)
- 3 x threaded cable inlets suitable for cable gland (SDM)
- 1 x M12 connector for pre-wired solutions (SP/SM)



Safety Limit Switches

Safety Limit Switches with separate actuator - Description

APPLICATIONS

Easy to use, the limit switches with small latch (key) offer specific qualities:

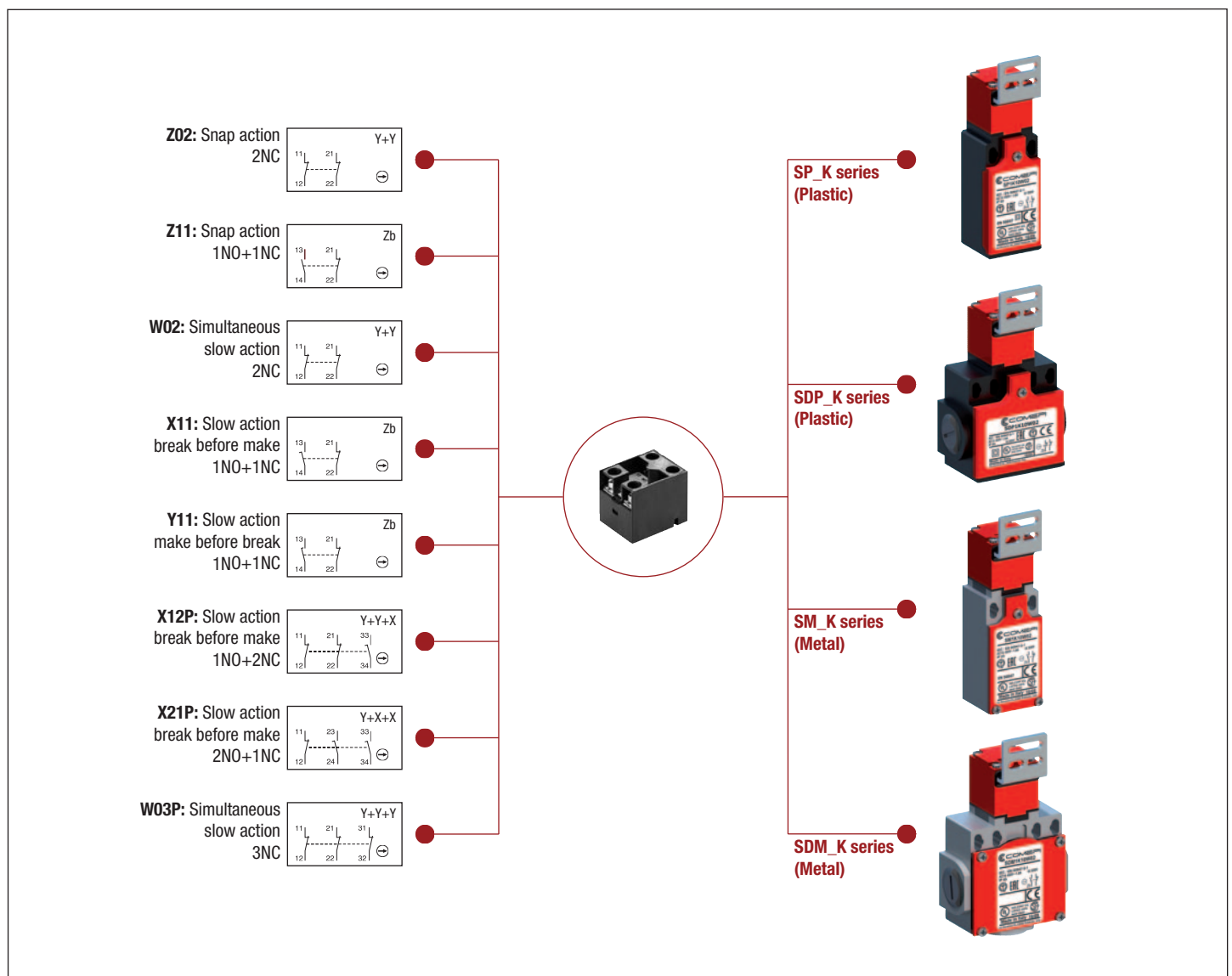
- Capability for strong current switching (conventional thermal current 10 A).
- Opening guaranteed of the "N.C." contact(s) when the small latch is withdrawn from the limit switch.
- Contact blocks with dependent action and positive opening operation of the "N.C." normally closed contact(s) (symbol \ominus).
- Electrically separated contacts.
- Precision on operation positions (consistency).
- Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for monitoring and protection of industrial machines without inertia in which downtime is less than access time to the dangerous area. Use on sliding or pivoting protectors (covers, cases, doors, grids, etc.).

- They contribute to protection of operators working on dangerous machines, by opening the control circuit. Withdrawal of the small latch (key) by opening the mobile protector causes immediate stopping of the machine drive.
- They comply with the requirements of European Directives (Low Voltage and Machines Directive) and are conform to European and international standards.

DESCRIPTION

Safety limit switches with small latch (key) of SP/SDP series are made of fibre-glass reinforced UL-V0 thermoplastic material, and they offer double insulation \square and a degree of protection IP65. Safety limit switches of SM/SDM series are made of painted zamack and have a degree of protection IP66. All models are equipped with 1NO+1NC, 2NC, 1NO+2NC, 2NO+1NC or 3NC contact blocks with positive opening operation of the "N.C." contact(s).



Safety Limit Switches

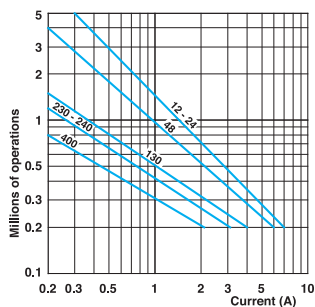
Safety Limit Switches with separate actuator - Technical Data

	SP / SDP Series	SM / SDM Series
Standards	IEC 60947-5-1, EN 60947-5-1 UNI EN ISO 14119	
Certifications - Approvals	UL - CSA - IMQ - EAC - CCC	
Air temperature near the device		
– during operation	°C	– 25 ... + 70
– for storage	°C	– 30 ... + 80
Mounting positions	All positions are authorized	
Protection against electrical shocks (acc. to IEC 61140)	Class II	Class I
Degree of protection (according to IEC 60529 and EN 60529)	IP 65	IP 66

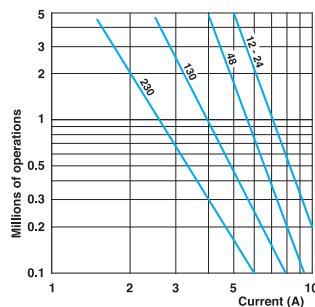
Electrical Data

Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14	500 V (degree of pollution 3) (400 V for contacts type Z02, X12P, X21P, W03P) A 600, Q 600 (A 300, Q 300 for SM/SDM series and contacts type X12P, X21P, W03P)	
Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1)	kV	6
Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C	A	10
Short-circuit protection $U_e < 500$ V a.c. - gG (gl) type fuses	A	10
Rated operational current I_e / AC-15 (according to IEC 60947-5-1)	24 V - 50/60 Hz A 120 V - 50/60 Hz A 400 V - 50/60 Hz A	10 6 4
I_e / DC-13 (according to IEC 60947-5-1)	24 V - d.c. A 125 V - d.c. A 250 V - d.c. A	6 0.55 0.4
Switching frequency	Cycles/h	3600
Load factor		0.5
Resistance between contacts	m Ω	25
Connecting terminals	M3.5 (+, -) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type)	
Terminal for protective conductor	-	M3.5 (+, -) pozidriv 2 screw with cable clamp
Recommended tightening torque	Plastic	Metal
Cover	0,5Nm, max 0,8	0,8Nm, max 0,9
Head	0,5Nm, max 0,8	0,8Nm, max 0,9
Microswitch	0,8Nm, max 0,9	0,8Nm, max 0,9
Connecting capacity	1 or 2 x mm ²	0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type)
Terminal marking	According to IEC 60947-5-1	
Mechanical durability	1 million of operations	
Electrical durability (according to IEC 60947-5-1)	Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below)	
B10d	2 million of operations	

AC-15 - Snap action



AC-15 - Slow action



DC-13	Snap action	Slow action
	Power breaking for a durability of 5 million operating cycles	
Voltage	24 V	12 W
Voltage	48 V	9 W
Voltage	110 V	6 W

• Ordering details	page	6-7
• Additional Technical Data	page	96

Safety Limit Switches

Safety Limit Switches with separate actuator - Technical Data

Technical data approved by IMQ

Standards	Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards		
Degree of protection	IP 65 (SP/SDP/SBP series), IP 66 (SM/SDM/SBM/SCM series)		
Rated insulation voltage U_i	500 V (degree of pollution 3) (400 V for contacts type Z02, X12P, X21P, W03P)		
Rated impulse withstand voltage U_{imp}	6 kV		
Conventional free air thermal current I_{th}	10 A		
Short-circuit protection - gG (gl) type fuses	10 A		
Rated operational current			
I_e / AC-15	24 V - 50/60 Hz	10 A	
	400 V - 50/60 Hz	4 A (1.8A for contacts type X12, X21, W03)	
I_e / DC-13	24 V - d.c.	6 A (2.8A for contacts type X12, X21, W03)	
	125 V - d.c.	0,55 A	
	250 V - d.c.	0.4 A (0.27A for contacts type X12, X21, W03)	

Technical data approved by UL

Standards	Devices conform with UL 508
Contact blocks type Z11, X11, Y11, W02 and Z02	A600, Q600
Utilization categories	(A300, Q300 when installed in SM/SDM series)
Contact blocks type X12, X21, W03	A600, Q600
Utilization categories	A600, Q600
Contact blocks type X12P, X21P and W03P	A300, Q300
Utilization categories	A300, Q300

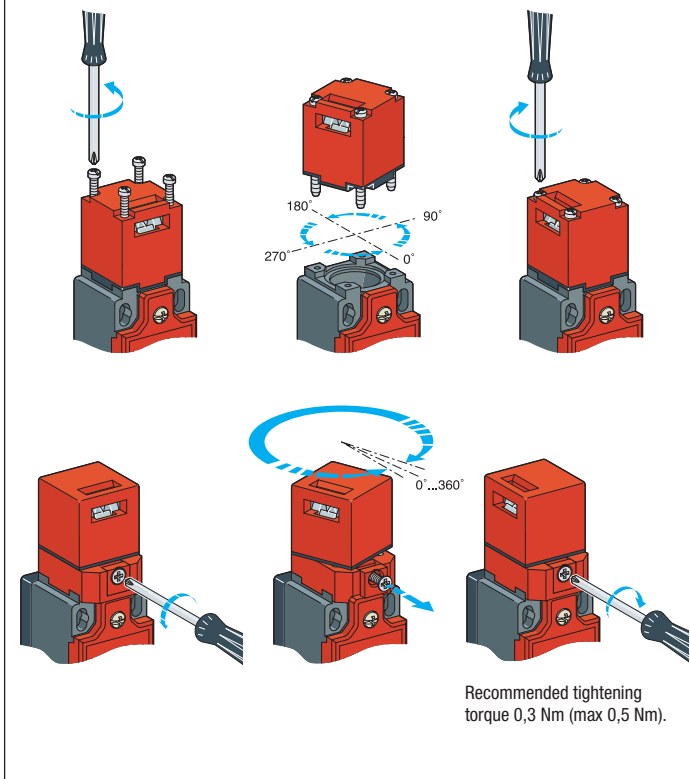
Use 60/75°C copper (Cu) conductor only. Wire ranges 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

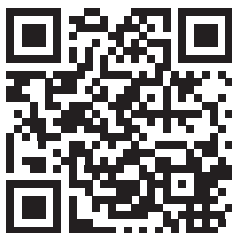
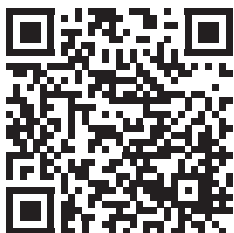
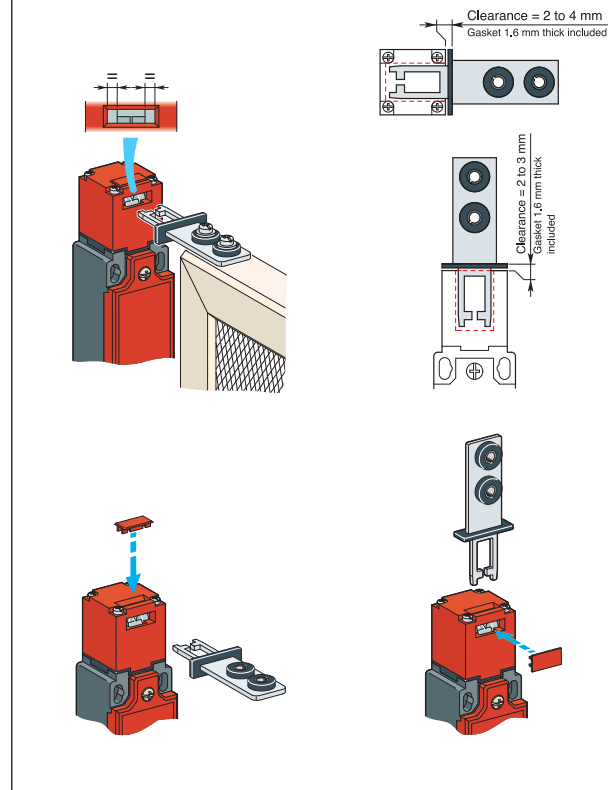
IMPLEMENTATION

Operating head orientation

The head can be rotated each 90°.
Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Key adjustment



Download

Instruction sheet – Safety limit switches with separated actuator
CE declaration

Safety Limit Switches SP/SDP_K

Polymeric casing - IP65 ☐

Electrical connection:

Replace the symbol "•" with the number of the thread desired

1: Cable gland PG 13.5

2: Cable gland 1/2" NPT (with adapter)

3: Cable gland PG 11

4: Cable gland M16 x 1,5

5: Cable gland M20 x 1,5

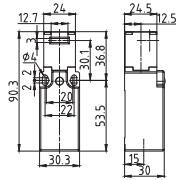
6: M12 4 poles connector

7: M12 5 poles connector

8: M12 8 poles connector

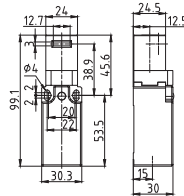
Operating keys to be ordered separately (see page 13)

K10 Adjustable head 90° (replaces K20)



Min. actuating force 15 N (30N ⇄)
Weight 80 g
Operating diagram Page 96

K80 Fully turnable (replaces K120)



Min. actuating force 15 N (30N ⇄)
Weight 90 g
Operating diagram Page 96

Contact Blocks

Z11 (1NO+1NC)	SP•K10Z11	SP•K80Z11
X11 (1NO+1NC)	SP•K10X11	SP•K80X11
Y11 (1NO+1NC)	SP•K10Y11	SP•K80Y11
W02 (2NC)	SP•K10W02	SP•K80W02
Z02 (2NC)	SP•K10Z02	SP•K80Z02
X12P (1NO+2NC)	SP•K10X12P	SP•K80X12P
X21P (2NO+1NC)	SP•K10X21P	SP•K80X21P
W03P (3NC)	SP•K10W03P	SP•K80W03P

Electrical connection:

Replace the symbol "•" with the number of the thread desired

1: Cable gland PG 13.5

2: Cable gland 1/2" NPT (with adapter)

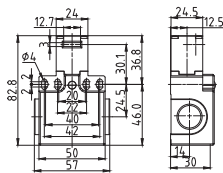
3: Cable gland PG 11

4: Cable gland M16 x 1,5

5: Cable gland M20 x 1,5

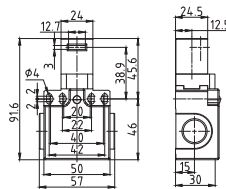
Operating keys to be ordered separately (see page 13)

K10 Adjustable head 90° (replaces K20)



Min. actuating force 15 N (30N ⇄)
Weight 110 g
Operating diagram Page 96

K80 Fully turnable (replaces K120)



Min. actuating force 15 N (30N ⇄)
Weight 120 g
Operating diagram Page 96

Contact Blocks

Z11 (1NO+1NC)	SDP•K10Z11	SDP•K80Z11
X11 (1NO+1NC)	SDP•K10X11	SDP•K80X11
Y11 (1NO+1NC)	SDP•K10Y11	SDP•K80Y11
W02 (2NC)	SDP•K10W02	SDP•K80W02
Z02 (2NC)	SDP•K10Z02	SDP•K80Z02
X12P (1NO+2NC)	SDP•K10X12P	SDP•K80X12P
X21P (2NO+1NC)	SDP•K10X21P	SDP•K80X21P
W03P (3NC)	SDP•K10W03P	SDP•K80W03P

Safety Limit Switches **SM/SDM_K**

Metal casing - IP66

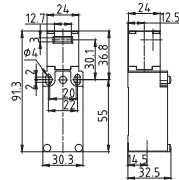
Electrical connection:

Replace the symbol "•" with the number of the thread desired

- 1: Cable gland PG 13.5
- 2: Cable gland 1/2" NPT (with adapter)
- 3: Cable gland PG 11
- 4: Cable gland M16 x 1,5
- 5: Cable gland M20 x 1,5
- 7: M12 5 poles connector
- 8: M12 8 poles connector

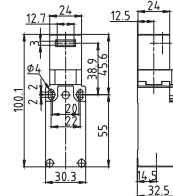
Operating keys to be ordered separately (see page 13)

K10 Adjustable head 90° (replaces K20)



Min. actuating force: 15 N (30N ⊖)
 Weight: 175 g
 Operating diagram: Page 96

K80 Fully turnable (replaces K120)



Min. actuating force: 15 N (30N ⊖)
 Weight: 185 g
 Operating diagram: Page 96

Contact Blocks

Z11 (1NO+1NC)	SM•K10Z11	SM•K80Z11
X11 (1NO+1NC)	SM•K10X11	SM•K80X11
Y11 (1NO+1NC)	SM•K10Y11	SM•K80Y11
W02 (2NC)	SM•K10W02	SM•K80W02
Z02 (2NC)	SM•K10Z02	SM•K80Z02
X12P (1NO+2NC)	SM•K10X12P	SM•K80X12P
X21P (2NO+1NC)	SM•K10X21P	SM•K80X21P
W03P (3NC)	SM•K10W03P	SM•K80W03P

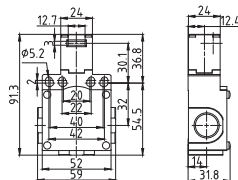
Electrical connection:

Replace the symbol "•" with the number of the thread desired

- 1: Cable gland PG 13.5
- 2: Cable gland 1/2" NPT (with adapter)
- 3: Cable gland PG 11
- 4: Cable gland M16 x 1,5
- 5: Cable gland M20 x 1,5

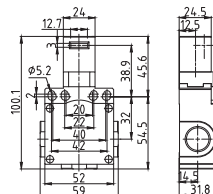
Operating keys to be ordered separately (see page 13)

K10 Adjustable head 90° (replaces K20)



Min. actuating force: 15 N (30N ⊖)
 Weight: 235 g
 Operating diagram: Page 96

K80 Fully turnable (replaces K120)



Min. actuating force: 15 N (30N ⊖)
 Weight: 245 g
 Operating diagram: Page 96

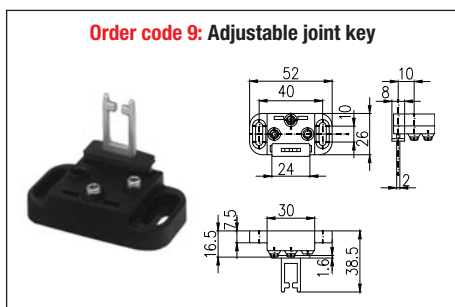
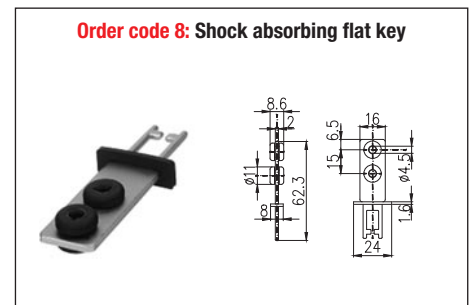
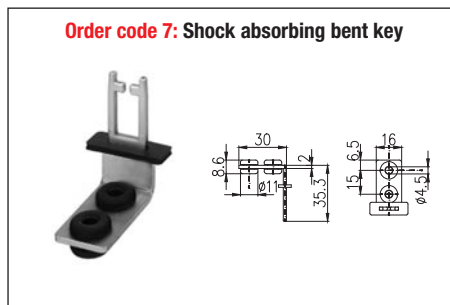
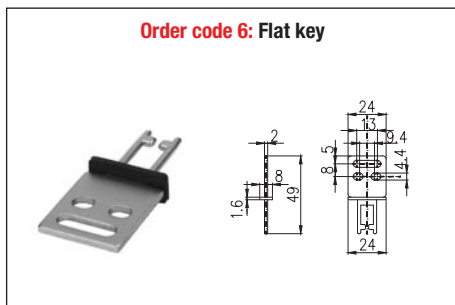
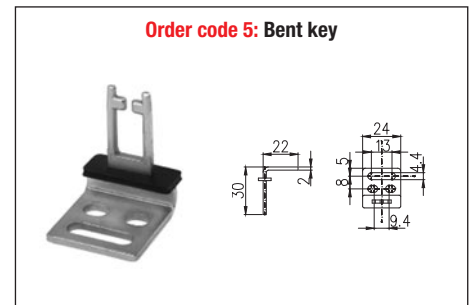
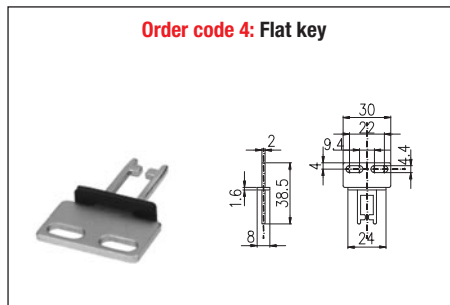
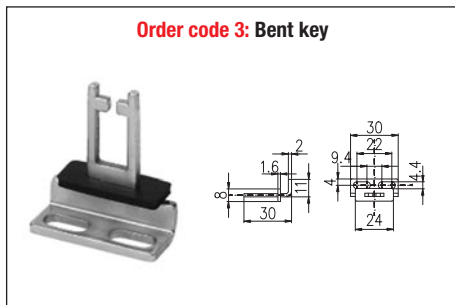
Contact Blocks

Z11 (1NO+1NC)	SDM•K10Z11	SDM•K80Z11
X11 (1NO+1NC)	SDM•K10X11	SDM•K80X11
Y11 (1NO+1NC)	SDM•K10Y11	SDM•K80Y11
W02 (2NC)	SDM•K10W02	SDM•K80W02
Z02 (2NC)	SDM•K10Z02	SDM•K80Z02
X12P (1NO+2NC)	SDM•K10X12P	SDM•K80X12P
X21P (2NO+1NC)	SDM•K10X21P	SDM•K80X21P
W03P (3NC)	SDM•K10W03P	SDM•K80W03P

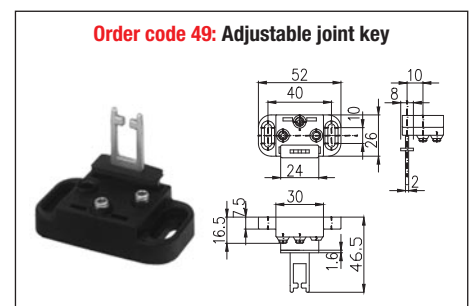
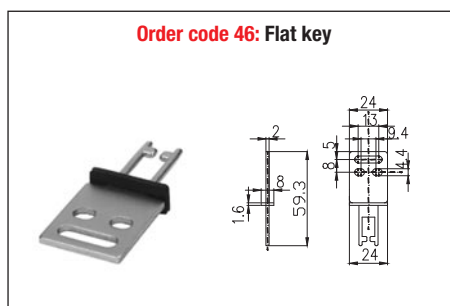
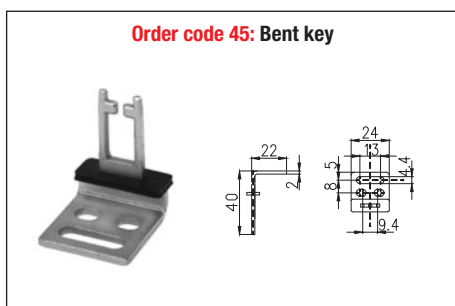
Safety Limit Switches **Accessories**

Operating keys

FOR OPERATING HEAD MODELS K10 AND K80 (dimensions in mm.)



FOR OPERATING HEAD MODELS K3000, K4000, K5000 (dimensions in mm.)



MINIMUM VALUES (mm)

	KEY 3	KEY 4	KEY 5/45	KEY 6/46	KEY 7	KEY 8	KEY 9/49
R1	400	400	400	400	250	350	180
R2	400	400	400	400	350	350	200

