Hinge mount Safety Limit Switches

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



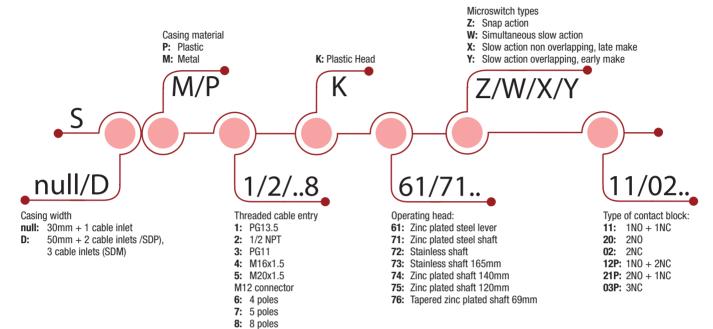












HOW IS IT MADE?

01 A variety of operating inox keys

- · Zinc plated steel shaft
- Stainless steel shaft
- Zinc plated steel lever

02 Cover

- 1 or 3 screws for 30 mm. casing
- 1 or 4 screws for 50 mm. casing

03 Electrical connection

- 1 x cable gland for SP and SM series
- 2 x cable gland for SDP series
- 3 x cable gland for SDM series

04 Casing

- 30 mm. width with standardized dimensions acc. to EN 50047
- 50 mm. width with standardized dimensions

Mounting screws

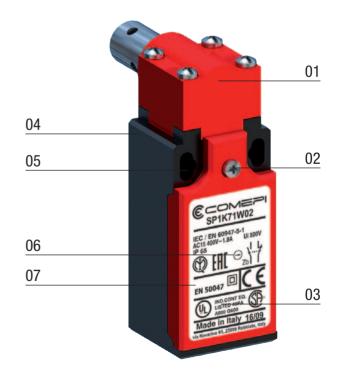
- 2 x M4 screws on top part for 30 mm. width
- 2 or 4 x M4 screws on top part for 50 mm. width

06 Contact Block

- Positive opening operation
- Snap action or slow action
- Contacts are electrically separated

07 Connecting terminals

- Block of 2 contacts: M3.5 (+, -) pozidriv 2 screws
- Block of 3 contacts: M3 (+, -) screw
- · Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standard





Hinge mount Safety Limit Switches - Description

APPLICATIONS

Easy to use, the limit switches with rotative axis or lever offer specific qualities:

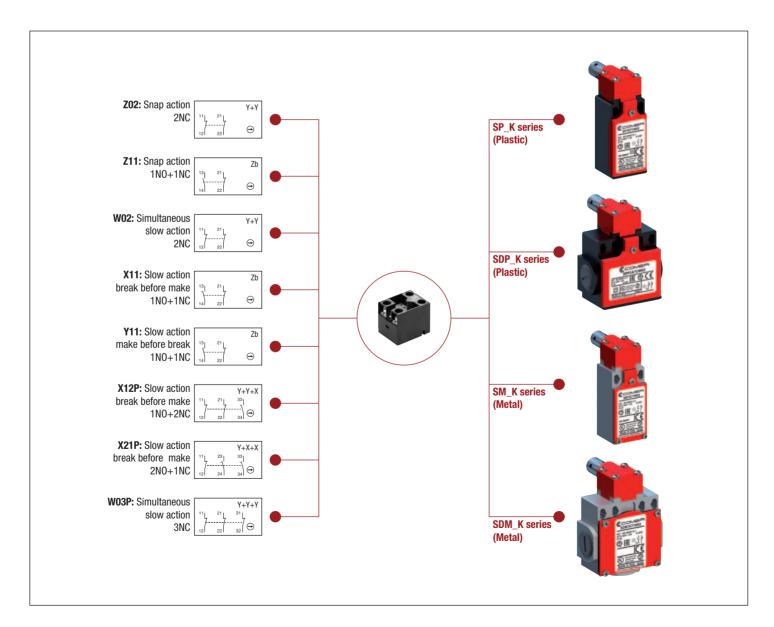
- Capability for strong current switching (conventional thermal current 10 A).
- Opening of the "N.C." contact(s) for a very small rotation angle: 12°.
- Contact blocks with dependent action and positive opening operation of the "N.C." normally closed contact(s) (symbol $\ \ominus$).
- Electrically separated contacts.
- Precision on operating positions (consistency).
- · Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for monitoring and protection of light industrial machines without inertia equipped with angular movement protectors (doors, hinged grids, rotative covers or cases, etc.). Detection by the rotative axis or by means of a lever.

- Opening of the mobile protector guarantees operator protection by immediately stopping the machine drive.
- These switches are suitable for conformity of the existing installed machine base, as they can be mounted on protection devices already installed.
- 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 of SP/SDP series are made of fibre-glass reinforced UL-V0 thermoplastic material, and the offer double insulation and a degree of protection IP65. Safety limit switches of SM/SDM series are made of zinc alloy (zamack) and have a degree of protection IP66. They are equipped with 1N0+1NC, 2NC, 1NO+2NC, 2NO+1NC or 3NC contact blocks with positive opening operation of the "N.C." contact(s).



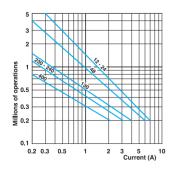


Hinge mount Safety Limit Switches - Technical Data

			SP / SDP Series	SM / SDM Series
Standards				, EN 60947-5-1
			UNI EN IS	SO 14119
Certifications - Approvals			UL - CSA - IM	Q - EAC - CCC
Air temperature near the device				
 during operation 		°C	– 25 .	+ 70
- for storage		°C	- 30 .	+ 80
Mounting positions			All positions a	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 Ui				
- according to IEC 60947-1 and EN 60947-1			500 V (degree of pollution 3) (400 V fo	r contacts type Z02, X12P, X21P, W03P)
- according to UL 508 and CSA C22-2 n° 14			A 600, Q 600 (A 300, Q 300 for SM/SDM s	series and contacts type X12P, X21P, W03P)
Rated impulse withstand voltage U _{imp}		147		6
(according to IEC 60947-1 and EN 60947-1)		kV		6
Conventional free air thermal current Ith		۸	-	0
(according to IEC 60947-5-1) θ < 40 °C		Α	'	0
Short-circuit protection		А	1	0
$\mathbf{U_e} < 500 \text{ V a.c.} - gG (gl) \text{ type fuses}$			•	
Rated operational current				_
I_e / AC-15 (according to IEC 60947-5-1)	24 V - 50/60 Hz	Α		0
	120 V - 50/60 Hz	Α		6
	400 V - 50/60 Hz	A		4
I_e / DC-13 (according to IEC 60947-5-1)	24 V - d.c.	Α		6
	125 V - d.c.	Α		55
	250 V - d.c.	Α		.4
Switching frequency	Сус	cles/h		500
Load factor			_	.5
Resistance between contacts		$m\Omega$	_	25
Connecting terminals			M3.5 (+, -) pozidriv 2 screw with cab	e 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		or 3 poles contacts type)
Terminal marking				EC 60947-5-1
Mechanical durability			1 million of	f operations

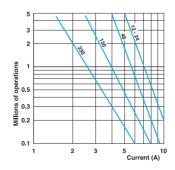
AC-15 - Snap action

B₁₀d



Electrical durability (according to IEC 60947-5-1)

AC-15 - Slow action



DC-13		Snap action Slow action	
		Power breaking for a durabili of 5 milion operating cycles	
Voltage	24 V	9.5 W	12 W
Voltage	48 V	6.8 W	9 W
Voltage	110 V	3.6 W	6 W

Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below)

2 millions of operations

Ordering details	page	18-22
Additional Techical Data	page	96



Hinge mount Safety Limit Switches - 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	ı	IP 65 (SP/SDP series) , IP 66 (SM/SDM series)		
Rated insulation voltage U _i		500 V (degree of pollution 3)		
		(400V for 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 co	urrent			
I _e / AC-15	24 V - 50/60 Hz	10 A		
	400 V - 50/60 Hz	4 A		
I _e / DC-13	24 V - d.c.	6 A		
•	125 V - d.c.	0.55 A		
	250 V - d c	0.4.6		

Technical data approved by UL

Standards Devices conform with UL 508

Contact blocks type Z11, X11, Y11, W02 and Z02

Utilization categories A600, Q600

(A300, Q300 when installed in SM/SDM series)

Contact blocks type X12P, X21P and W03P

Utilization categories

A300, Q300

Use 60/75°C copper (Cu) conductor only. Wire rages 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.

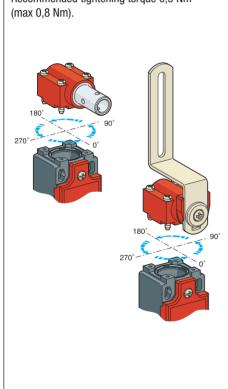
For the complete list of approved products, contact our technical department

IMPLEMENTATION

Operating head orientation

The head can be rotated each 90°.

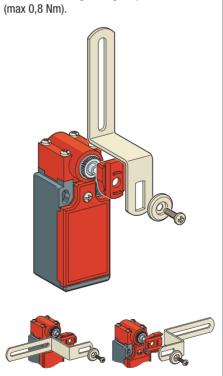
Recommended tightening torque 0,5 Nm (max 0.8 Nm)



Lever adjustment

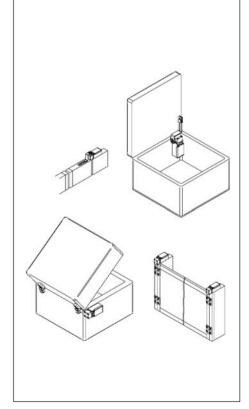
The lever of the head model K61 can ber adjusted every 10° in order to obtain the maximum flexibility on the working plan.

Recommended tightening torque 0,5 Nm (may 0.8 Nm)



Application

Monitoring of safety gates in machinery without inertia.







Download

Instruction sheet – Hinge mounting safety limit switches



Safety Limit Switches SP_K

Polymeric casing - IP65

Electrical connection:

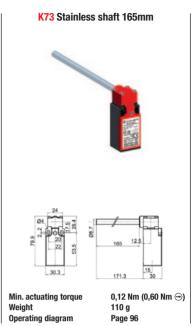
Replace the symbol "•" with the number of the thread desired

- 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









Z11	(1NO+1NC)	SP•K71Z11	SP•K72Z11	SP•K73Z11
X11	(1NO+1NC)	SP•K71X11	SP•K72X11	SP•K73X11
Y11	(1NO+1NC)	SP•K71Y11	SP•K72Y11	SP•K73Y11
W02	(2NC)	SP•K71W02	SP•K72W02	SP•K73W02
Z02	(2NC)	SP•K71Z02	SP•K72Z02	SP•K73Z02
X12F	(1NO+2NC)	SP•K71X12P	SP•K72X12P	SP•K73X12P
X21F	(2NO+1NC)	SP•K71X21P	SP•K72X21P	SP•K73X21P
W031	P (3NC)	SP•K71W03P	SP•K72W03P	SP•K73W03P

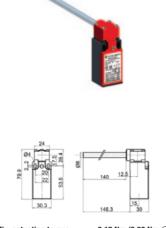
Electrical connection:

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- 7: M12 5 poles connector
- 8: M12 8 poles connector

Contact Blocks

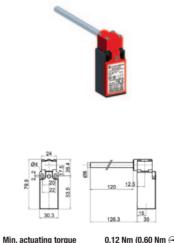
K74 Zinc plated shaft 140mm





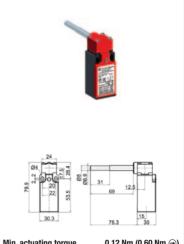
0,12 Nm (0,60 Nm ⊕) 110 g Page 96

K75 Zinc plated shaft 120mm



ng torque 0,12 Nm (0,60 Nm ⊕) 110 g agram Page 96

K76 Tapered zinc plated shaft 69mm



Min. actuating torque	
Weight	
Onerating diagram	

0,12 Nm (0,60 Nm ⊖) 110 g

Z11	(1NO+1NC)	SP•K74Z11	SP•K75Z11	SP•K76Z11
X11	(1NO+1NC)	SP•K74X11	SP•K75X11	SP•K76X11
Y11	(1NO+1NC)	SP•K74Y11	SP•K75Y11	SP•K76Y11
W02	(2NC)	SP•K74W02	SP•K75W02	SP•K76W02
Z02	(2NC)	SP•K74Z02	SP•K75Z02	SP•K76Z02
X12P	(1NO+2NC)	SP•K74X12P	SP•K75X12P	SP•K76X12P
X21P	(2NO+1NC)	SP•K74X21P	SP•K75X21P	SP•K76X21P
W03F	(3NC)	SP•K74W03P	SP•K75W03P	SP•K76W03P

Weight



Safety Limit Switches **SM_K**

Metal casing - IP66

Electrical connection:

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

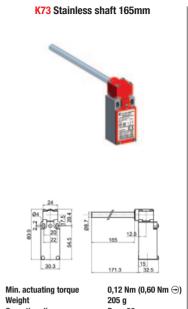
- 1: Cable gland PG 13.5
- 2: Cable gland 1/2" NPT (with adapter)
- 3: Cable gland PG 11
- 4: Cable gland M16 x 1,5
- 5: Cable gland M20 x 1,5
- 7: M12 5 poles connector
- 8: M12 8 poles connector





K72 Stainless steel shaft Min. actuating torque 0,12 Nm (0,60 Nm ⊕)

185 g Page 96 Weight Operating diagram



Weight
Operating diagram

205 g Page 96

Contact Blocks

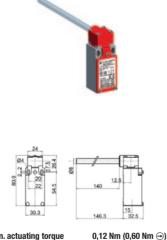
Z11	(1NO+1NC)	SM•K71Z11	SM•K72Z11	SM•K73Z11
X11	(1NO+1NC)	SM•K71X11	SM•K72X11	SM•K73X11
Y11	(1N0+1NC)	SM•K71Y11	SM•K72Y11	SM•K73Y11
W02	(2NC)	SM•K71W02	SM•K72W02	SM•K73W02
Z02	(2NC)	SM•K71Z02	SM•K72Z02	SM•K73Z02
X12P	(1NO+2NC)	SM•K71X12P	SM•K72X12P	SM•K73X12P
X21P	(2NO+1NC)	SM•K71X21P	SM•K72X21P	SM•K73X21P
W03F	(3NC)	SM•K71W03P	SM•K72W03P	SM•K73W03P

Electrical connection:

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

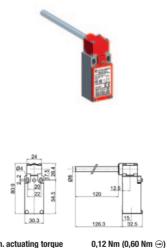
- 1: Cable gland PG 13.5
- 2: Cable gland 1/2" NPT (with adapter)
- 3: Cable gland PG 11
- 4: Cable gland M16 x 1,5
- 5: Cable gland M20 x 1,5
- 7: M12 5 poles connector
- 8: M12 8 poles connector

K74 Zinc plated shaft 140mm



Min. actuating torque	0,12 Nm (0,6
Weight	205 g
Operating diagram	Page 96

K75 Zinc plated shaft 120mm



lin. actuating torque	0,12 Nm (0,60 Nm (
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K76 Tapered zinc plated shaft 69mm

Min. actuating torque Weight Operating diagram

0,12 Nm (0,60 Nm ⊕) 205 g

	, , , , ,	, , , , ,	, , , , ,	_
Z11	(1NO+1NC)	SM•K74Z11	SM•K75Z11	SM•K76Z11
X11	(1NO+1NC)	SM•K74X11	SM•K75X11	SM•K76X11
Y11	(1NO+1NC)	SM•K74Y11	SM•K75Y11	SM•K76Y11
W02	(2NC)	SM•K74W02	SM•K75W02	SM•K76W02
Z 02	(2NC)	SM•K74Z02	SM•K75Z02	SM•K76Z02
X12P	(1NO+2NC)	SM•K74X12P	SM•K75X12P	SM•K76X12P
X21P	(2NO+1NC)	SM•K74X21P	SM•K75X21P	SM•K76X21P
W03I	P (3NC)	SM•K74W03P	SM•K75W03P	SM•76W03P



Safety Limit Switches **SDP_K**

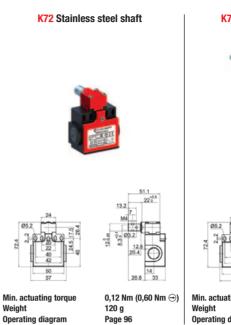
Polymeric casing - IP65

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







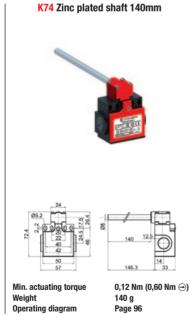
Contact Blocks

Z11	(1NO+1NC)	SDP•K71Z11	SDP•K72Z11	SDP•K73Z11
X11	(1NO+1NC)	SDP•K71X11	SDP•K72X11	SDP•K73X11
Y11	(1NO+1NC)	SDP•K71Y11	SDP•K72Y11	SDP•K73Y11
W02	(2NC)	SDP•K71W02	SDP•K72W02	SDP•K73W02
Z02	(2NC)	SDP•K71Z02	SDP•K72Z02	SDP•K73Z02
X12F	P (1N0+2NC)	SDP•K71X12P	SDP•K72X12P	SDP•K73X12P
X21F	2 (2NO+1NC)	SDP•K71X21P	SDP•K72X21P	SDP•K73X21P
W03	P (3NC)	SDP•K71W03P	SDP•K72W03P	SDP•K73W03P
Y11 W02 Z02 X12F X21F	(1N0+1NC) (2NC) (2NC) • (1N0+2NC) • (2N0+1NC)	SDP•K71Y11 SDP•K71W02 SDP•K71Z02 SDP•K71X12P SDP•K71X21P	SDP•K72Y11 SDP•K72W02 SDP•K72Z02 SDP•K72X12P SDP•K72X21P	SDP•K73Y11 SDP•K73W02 SDP•K73Z02 SDP•K73X12P SDP•K73X21P

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 diagram

	<u> </u>		
Z11 (1NO+1NC)	SDP•K74Z11	SDP•K75Z11	SDP•K76Z11
X11 (1NO+1NC)	SDP•K74X11	SDP•K75X11	SDP•K76X11
Y11 (1NO+1NC)	SDP•K74Y11	SDP•K75Y11	SDP•K76Y11
W02 (2NC)	SDP•K74W02	SDP•K75W02	SDP•K76W02
Z02 (2NC)	SDP•K74Z02	SDP•K75Z02	SDP•K76Z02
X12P (1N0+2NC)	SDP•K74X12P	SDP•K75X12P	SDP•K76X12P
X21P (2N0+1NC)	SDP•K74X21P	SDP•K75X21P	SDP•K76X21P
W03P (3NC)	SDP•K74W03P	SDP•K75W03P	SDP•K76W03P

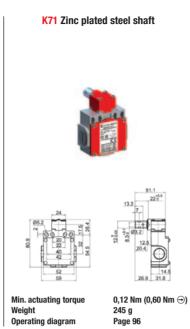
Safety Limit Switches **SDM_K**

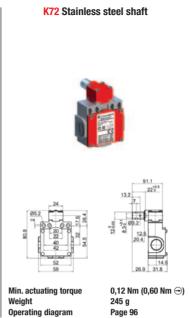
Metal casing - IP66

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





K73 Albero in inox 165mm

**Total Control of the Control of the

Contact Blocks

Z11	(1NO+1NC)	SDM•K71Z11	SDM•K72Z11	SDM•K73Z11
X11	(1NO+1NC)	SDM•K71X11	SDM•K72X11	SDM•K73X11
Y11	(1N+1NC)	SDM•K71Y11	SDM•K72Y11	SDM•K73Y11
W02	(2NC)	SDM•K71W02	SDM•K72W02	SDM•K73W02
Z02	(2NC)	SDM•K71Z02	SDM•K72Z02	SDM•K73Z02
X12P	(1NO+2NC)	SDM•K71X12P	SDM•K72X12P	SDM•K73X12P
X21P	(2NO+1NC)	SDM•K71X21P	SDM•K72X21P	SDM•K73X21P
W03F	(3NC)	SDM•K71W03P	SDM•K72W03P	SDM•K73W03P

Electrical connection:

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

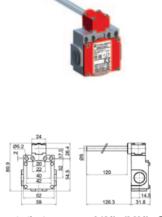
- 1: Cable gland PG 13.5
- 2: Cable gland 1/2" NPT (with adapter)
- 3: Cable gland PG 11
- 4: Cable gland M16 x 1,5
- **5:** Cable gland M20 x 1,5

K74 Zinc plated shaft 140mm



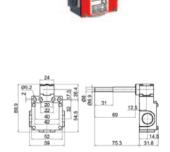
0,12 Nm (0,60 Nm ⊕) 265 g Page 96

K75 Zinc plated shaft 120mm



Min. actuating torque 0,12 Nm (0,60 Nm ⊕)
Weight 265 g
Operating diagram Page 96

K76 Tapered zinc plated shaft 69mm



Min. actuating torque		
Weight		
Operating diagram		

0,12 Nm (0,60 Nm ⊕) 265 g

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Z11 (1NO+1NC)	SDM•K74Z11	SDM•K75Z11	SDM•K76Z11
X11 (1NO+1NC)	SDM•K74X11	SDM•K75X11	SDM•K76X11
Y11 (1NO+1NC)	SDM•K74Y11	SDM•K75Y11	SDM•K76Y11
W02 (2NC)	SDM•K74W02	SDM•K75W02	SDM•K76W02
Z02 (2NC)	SDM•K74Z02	SDM•K75Z02	SDM•K76Z02
X12P (1N0+2NC)	SDM•K74X12P	SDM•K75X12P	SDM•K76X12P
X21P (2NO+1NC)	SDM•K74X21P	SDM•K75X21P	SDM•K76X21P
WO3P (3NC)	SDM•K74W03P	SDM•K75W03P	SDM•K76W03P



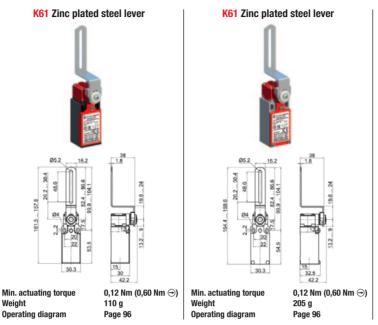
Safety Limit Switches **SP/SM/SDP/SDM_K**

Hinge Mount Safety Limit Switches

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 (only for SP models)
- 7: M12 5 poles connector
- 8: M12 8 poles connector



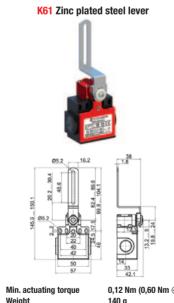
Contact Blocks

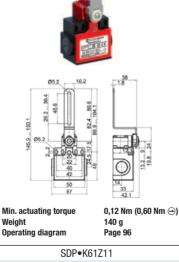
Z11 (1NO+1NC)	SP•K61Z11	SM•K61Z11	
X11 (1NO+1NC)	SP•K61X11	SM•K61X11	
Y11 (1NO+1NC)	SP•K61Y11	SM•K61Y11	
W02 (2NC)	SP•K61W02	SM•K61W02	
Z02 (2NC)	SP•K61Z02	SM•K61Z02	
X12P (1N0+2NC)	SP•K61X12P	SM•K61X12P	
X21P (2N0+1NC)	SP•K61X21P	SM•K61X21P	
W03P (3NC)	SP•K61W03P	SM•K61W03P	

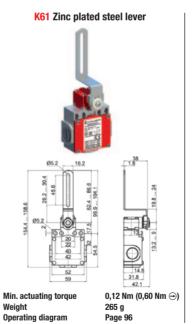
Electrical connection:

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







Z11	(1NO+1NC)	SDP•K61Z11	SDM•K61Z11
X11	(1NO+1NC)	SDP•K61X11	SDM•K61X11
Y11	(1NO+1NC)	SDP•K61Y11	SDM•K61Y11
W02	(2NC)	SDP•K61W02	SDM•K61W02
Z02	(2NC)	SDP•K61Z02	SDM•K61Z02
X12P	(1NO+2NC)	SDP•K61X12P	SDM•K61X12P
X21P	(2NO+1NC)	SDP•K61X21P	SDM•K61X21P
W03P	(3NC)	SDP•K61W03P	SDM•K61W03P

