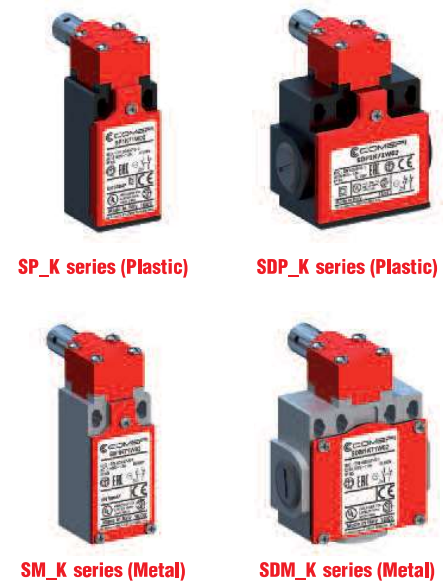
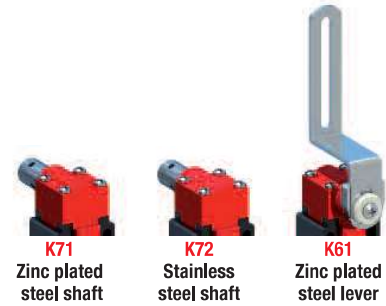
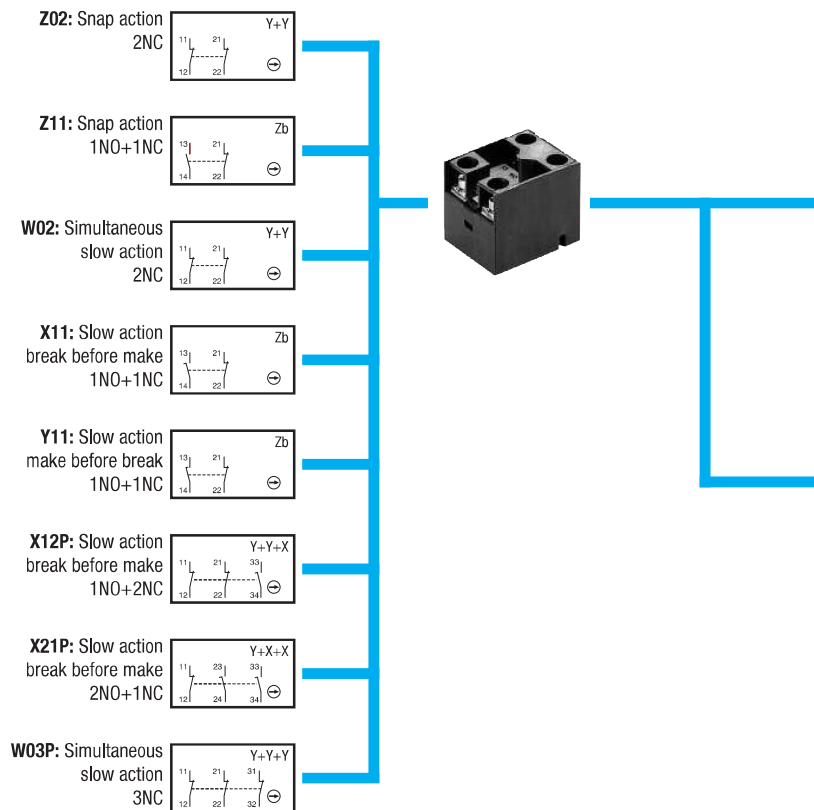


## Hinge mount Safety Limit Switches



### Contact blocks

**Type:** double break, electrically separated

**Approvals:** UL 508 / CSA C22-2 n. 14



## 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  $\square$  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 1NO+1NC, 2NC, 1NO+2NC, 2NO+1NC or 3NC contact blocks with positive opening operation of the "N.C." contact(s).

**Casing**

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

**Mounting the casing**

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

**Contact Block:**

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

**Connecting terminals:**

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

**A variety of operating heads:**

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

**Cover:**

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

**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

**Symbols**

**Example:**

S	P	1	K	71	X	1	1
---	---	---	---	----	---	---	---

**Structure:**

			K				
--	--	--	---	--	--	--	--

**Casing width:**

**S** = 30 mm width + 1 cable inlet

**SD** = 50 mm width + 2 cable inlets (SDP series) or 3 cable inlets (SDM series)

**P: Plastic casing M: Metal casing**

**Electrical connection**

1: cable inlets for PG13.5 cable gland

2: cable inlets for 1/2 NPT cable gland \*

3: cable inlets for PG11 cable gland

4: cable inlets for M16 x 1.5 cable gland

5: cable inlets for M20 x 1.5 cable gland

**Operating heads:** codes 71-72-61

**Contact block**

**11:** 1 NO + 1 NC contacts

**02:** 2 NC contacts

**12P:** 1 NO + 2 NC contacts

**21P:** 2 NO + 1 NC contacts

**03P:** 3 NC contacts

**Z:** Snap action

**W:** Slow action (contact dependent)

**X:** Slow action non-overlapping late make

**Y:** Slow action overlapping early make

\* In SP... and SDP... series, the 1/2" NPT thread is obtained by the use of a plastic adapter (delivered not mounted).

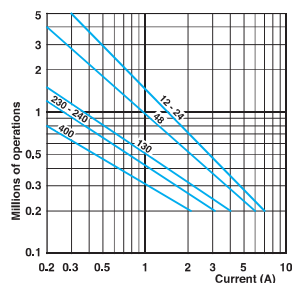
## Hinge mount Safety Limit Switches - Technical Data

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

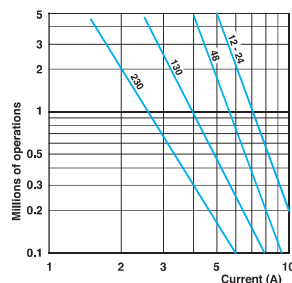
### Electrical Data

<b>Rated insulation voltage <math>U_i</math></b> - 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 X12P, X21P, W03P) A 600, Q 600 (A 300, Q 300 for SM/SDM series and contacts type X12P, X21P, W03P)	
<b>Rated impulse withstand voltage <math>U_{imp}</math></b> (according to IEC 60947-1 and EN 60947-1)	kV	6 (4 kV for contacts type X12P, X21P, W03P)
<b>Conventional free air thermal current <math>I_{th}</math></b> (according to IEC 60947-5-1) $\theta < 40$ °C	A	10
<b>Short-circuit protection</b> $U_e < 500$ V a.c. - gG (gl) type fuses	A	10
<b>Rated operational current</b> $I_e$ / 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	2.8 0.55 0.27
<b>Switching frequency</b>	Cycles/h	3600
<b>Load factor</b>		0.5
<b>Resistance between contacts</b>	m $\Omega$	25
<b>Connecting terminals</b>	M3.5 (+, –) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type)	
<b>Terminal for protective conductor</b>	– M3.5 (+, –) pozidriv 2 screw with cable clamp	
<b>Connecting capacity</b>	1 or 2 x mm <sup>2</sup>	0.75 ... 2.5 (0.34... 1.5 for 3 poles contacts type)
<b>Terminal marking</b>	According to IEC 60947-5-1	
<b>Mechanical durability</b>	1 million of operations	
<b>Electrical durability</b> (according to IEC 60947-5-1)	Utilization categories AC-15 and DC-13 (Load factor of 0,5 according to curves below)	
<b>B10d = 2.000.000 cycles</b>		

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	9.5 W	12 W
Voltage	48 V	6.8 W	9 W
Voltage	110 V	3.6 W	6 W

## 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	IP 65 (SP/SDP series) , IP 66 (SM/SDM series)		
Contact blocks type Z11, X11, Y11, W02 and Z02			
Rated insulation voltage $U_i$	500 V (degree of pollution 3)		
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	1,8 A	
$I_e$ / DC-13	24 V - d.c.	2,8 A	
	125 V - d.c.	0,55 A	
	250 V - d.c.	0,27 A	

### Technical data approved by UL

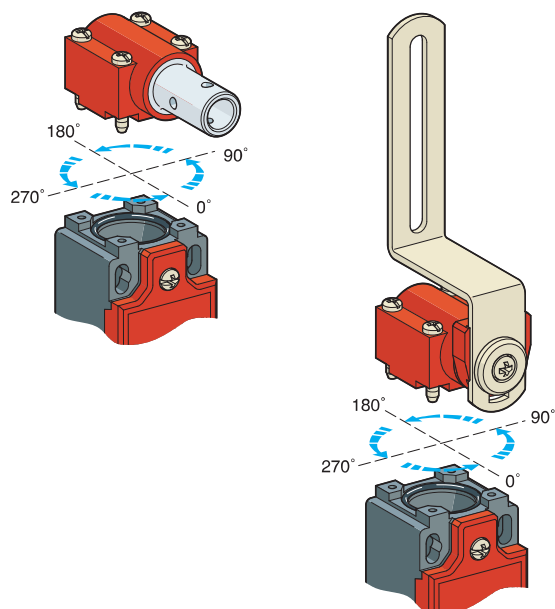
<b>Standards</b>	Devices conform with UL 508
<b>Contact blocks type Z11, X11, Y11, W02 and Z02</b>	
<b>Utilization categories</b>	A600, Q600 (A300, Q300 when installed in SM/SDM series)
<b>Contact blocks type X12P, X21P and W03P</b>	
<b>Utilization categories</b>	A300, Q300
Use 60/75°C copper (Cu) conductor 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

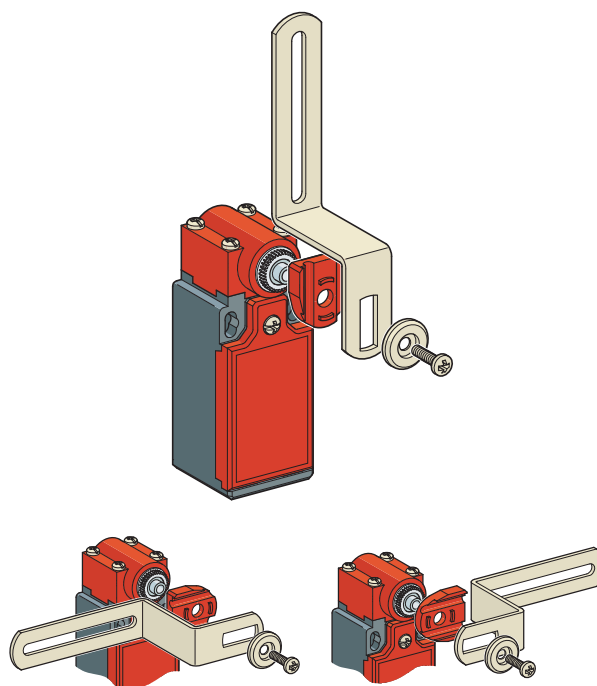
#### Operating head orientation

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



#### Lever adjustment

The lever of the head model K61 can be adjusted every 10° in order to obtain the maximum flexibility on the working plan.  
Recommended tightening torque 0,5 Nm (max 0,8 Nm).



## Polymeric casing - IP65

### Electrical connection:

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

1: Cable gland PG 13.5

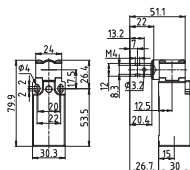
2: Cable gland 1/2" NPT (with adapter)

3: Cable gland PG 11

4: Cable gland M16 x 1,5

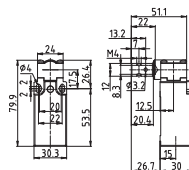
5: Cable gland M20 x 1,5

### K71 Zinc plated steel shaft



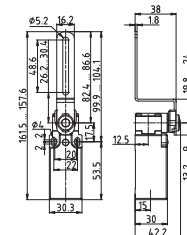
Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	90 g
Operating diagram	Page 53

### K72 Stainless steel shaft



Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	90 g
Operating diagram	Page 53

### K61 Zinc plated steel lever

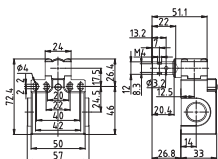


Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	110 g
Operating diagram	Page 53

### Contact Blocks

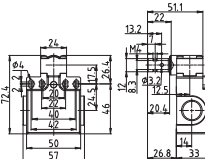
Z11 (1NO+1NC)	SP•K71Z11	SP•K72Z11	SP•K61Z11
X11 (1NO+1NC)	SP•K71X11	SP•K72X11	SP•K61X11
Y11 (1NO+1NC)	SP•K71Y11	SP•K72Y11	SP•K61Y11
W02 (2NC)	SP•K71W02	SP•K72W02	SP•K61W02
Z02 (2NC)	SP•K71Z02	SP•K72Z02	SP•K61Z02
X12P (1NO+2NC)	SP•K71X12P	SP•K72X12P	SP•K61X12P
X21P (2NO+1NC)	SP•K71X21P	SP•K72X21P	SP•K61X21P
W03P (3NC)	SP•K71W03P	SP•K72W03P	SP•K61W03P

### K71 Zinc plated steel shaft



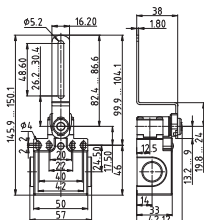
Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	120 g
Operating diagram	Page 53

### K72 Stainless steel shaft



Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	120 g
Operating diagram	Page 53

### K61 Zinc plated steel lever



Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	140 g
Operating diagram	Page 53

### Contact Blocks

Z11 (1NO+1NC)	SDP•K71Z11	SDP•K72Z11	SDP•K61Z11
X11 (1NO+1NC)	SDP•K71X11	SDP•K72X11	SDP•K61X11
Y11 (1NO+1NC)	SDP•K71Y11	SDP•K72Y11	SDP•K61Y11
W02 (2NC)	SDP•K71W02	SDP•K72W02	SDP•K61W02
Z02 (2NC)	SDP•K71Z02	SDP•K72Z02	SDP•K61Z02
X12P (1NO+2NC)	SDP•K71X12P	SDP•K72X12P	SDP•K61X12P
X21P (2NO+1NC)	SDP•K71X21P	SDP•K72X21P	SDP•K61X21P
W03P (3NC)	SDP•K71W03P	SDP•K72W03P	SDP•K61W03P

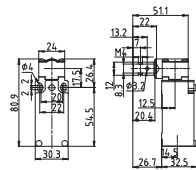
## Metal casing - IP66

### Electrical connection:

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

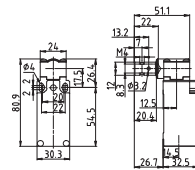
- 1: Cable gland PG 13.5
- 2: Cable gland 1/2" NPT
- 3: Cable gland PG 11
- 4: Cable gland M16 x 1,5
- 5: Cable gland M20 x 1,5

### K71 Zinc plated steel shaft



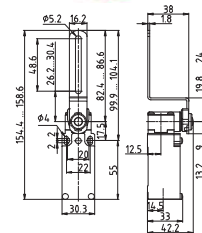
Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	185 g
Operating diagram	Page 53

### K72 Stainless steel shaft



Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	185 g
Operating diagram	Page 53

### K61 Zinc plated steel lever

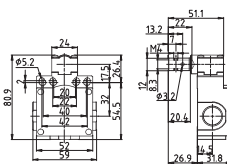


Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	205 g
Operating diagram	Page 53

### Contact Blocks

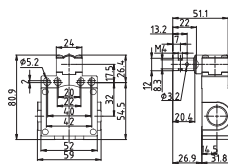
Z11 (1NO+1NC)	SM•K71Z11	SM•K72Z11	SM•K61Z11
X11 (1NO+1NC)	SM•K71X11	SM•K72X11	SM•K61X11
Y11 (1NO+1NC)	SM•K71Y11	SM•K72Y11	SM•K61Y11
W02 (2NC)	SM•K71W02	SM•K72W02	SM•K61W02
Z02 (2NC)	SM•K71Z02	SM•K72Z02	SM•K61Z02
X12P (1NO+2NC)	SM•K71X12P	SM•K72X12P	SM•K61X12P
X21P (2NO+1NC)	SM•K71X21P	SM•K72X21P	SM•K61X21P
W03P (3NC)	SM•K71W03P	SM•K72W03P	SM•K61W03P

### K71 Zinc plated steel shaft



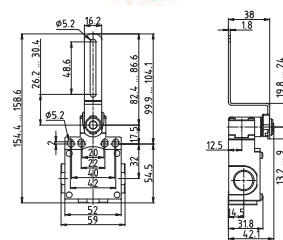
Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	245 g
Operating diagram	Page 53

### K72 Stainless steel shaft



Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	245 g
Operating diagram	Page 53

### K61 Zinc plated steel lever



Min. actuating torque	0,12 Nm (0,60 Nm ☺)
Weight	265 g
Operating diagram	Page 53

### Contact Blocks

Z11 (1NO+1NC)	SDM•K71Z11	SDM•K72Z11	SDM•K61Z11
X11 (1NO+1NC)	SDM•K71X11	SDM•K72X11	SDM•K61X11
Y11 (1NO+1NC)	SDM•K71Y11	SDM•K72Y11	SDM•K61Y11
W02 (2NC)	SDM•K71W02	SDM•K72W02	SDM•K61W02
Z02 (2NC)	SDM•K71Z02	SDM•K72Z02	SDM•K61Z02
X12P (1NO+2NC)	SDM•K71X12P	SDM•K72X12P	SDM•K61X12P
X21P (2NO+1NC)	SDM•K71X21P	SDM•K72X21P	SDM•K61X21P
W03P (3NC)	SDM•K71W03P	SDM•K72W03P	SDM•K61W03P