

# Limit switches

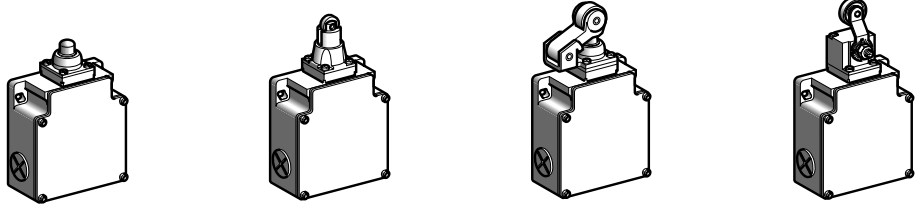
OsiSense XC Standard, Classic format

Metal, 2 x 2-pole contacts, type XCK ML

Complete switches with 3 cable entries

1

Type of head	Plunger (fixing by the body)	Rotary (fixing by the body)		
--------------	------------------------------	-----------------------------	--	--



Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever (1)
------------------	-------------------	----------------------	---	--------------------------------

**References of complete switches with 3 ISO M20 x 1.5 cable entries (2)**

<b>2 x 2-pole NC + NO snap action (XES P2151L)</b> 	<b>XCK ML110H29</b> 	<b>XCK ML102H29</b> 	<b>XCK ML121H29</b> 	<b>XCK ML115H29</b> 
<b>2 x 2-pole NC + NO break before make, slow break (XEN P2151L)</b> 	<b>XCK ML510H29</b> 	<b>XCK ML502H29</b> 	<b>XCK ML521H29</b> 	<b>XCK ML515H29</b> 

**References of complete switches with 3 entries tapped for n° 13 cable gland (2)**

<b>2 x 2-pole NC + NO snap action (XES P2151L)</b> 	<b>XCK ML110</b> 	<b>XCK ML102</b> 	<b>XCK ML121</b> 	<b>XCK ML115</b> 
<b>2 x 2-pole NC + NO break before make, slow break (XEN P2151L)</b> 	<b>XCK ML510</b> 	<b>XCK ML502</b> 	<b>XCK ML521</b> 	<b>XCK ML515</b> 

<b>Weight (kg)</b>	0.400	0.405	0.450	0.430
<b>Contact operation</b>	closed open	(A) = cam displacement (P) = positive opening point	NC contact with positive opening operation	

**Characteristics**

<b>Switch actuation</b>	On end	By 30° cam			
<b>Type of actuation</b>					
<b>Maximum actuation speed</b>	0.5 m/s	1.5 m/s			
<b>Mechanical durability</b>	3 million operating cycles				
<b>Minimum force</b>	For tripping	15 N	12 N	8 N	0.2 N.m
	For positive opening	60 N	50 N	50 N	0.5 N.m
<b>Cable entry</b>	3 entries tapped ISO M20 x 1.5, clamping capacity 7 to 13 mm, or 3 entries tapped for n° 13 cable gland conforming to NF C 68-300 (DIN Pg 13.5), clamping capacity 9 to 12 mm.				

(1) Adjustable throughout 360° in 5° steps, or in 90° steps by reversing the notched washer.  
 (2) Switches available with other 2-pole slow break contact blocks: NO + NC make before break, NC + NC simultaneous (with positive opening operation), NO + NO simultaneous. Please consult our Customer Care Centre.

**Note: replacement parts**  
 The heads of limit switches type XCK ML are the same as those for types XCK M and XCK L (see heads ZCK D10, ZCK D02, ZCK D21 and ZCK D15 on page 1/82).

## Limit switches

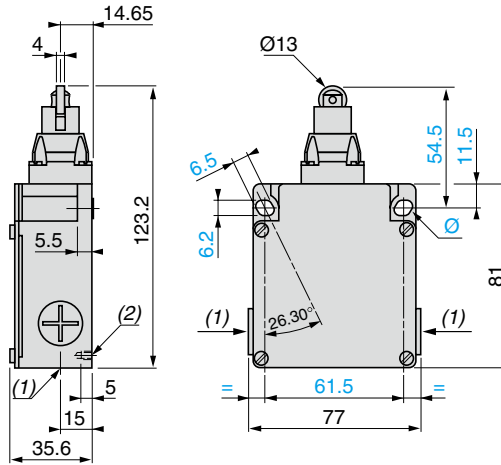
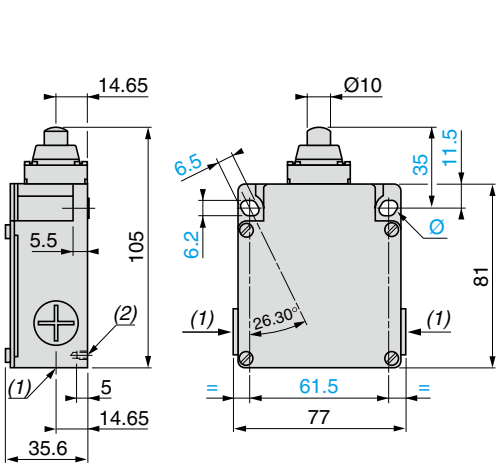
OsiSense XC Standard, Classic format

Metal, 2 x 2-pole contacts, type XCK ML

Complete switches with 3 cable entries

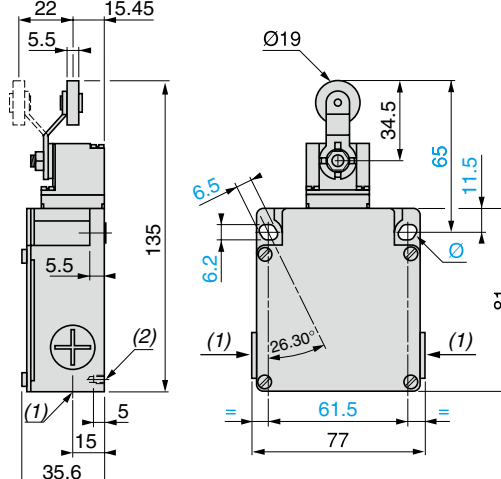
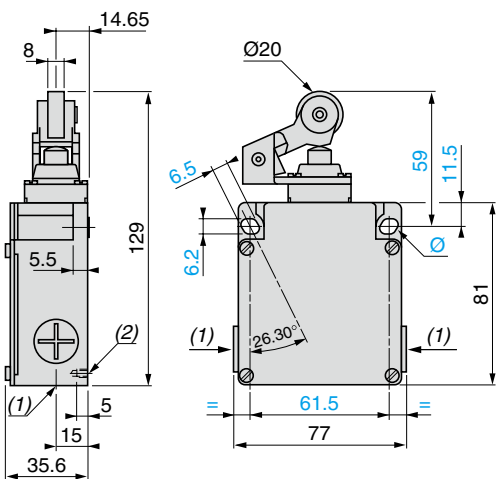
**XCK ML110H29, XCK ML510H29, XCK ML110, XCK ML510**

**XCK ML102H29, XCK ML502H29, XCK ML102, XCK ML502**



**XCK ML121H29, XCK ML521H29, XCK ML121, XCK ML521**

**XCK ML115H29, XCK ML515H29, XCK ML115, XCK ML515**



(1) XCK ML●●●H29: 3 entries tapped M20 x 1.5. XCK ML●●●: 3 tapped entries for n° 13 cable gland.

(2) 2 centring holes Ø 3.9 ± 0.2, for cover fixing holes alignment.

Ø 2 elongated holes 6.2 x 6.5, inclined at 26° 30' to the vertical axis, for M5 screws.

# Limit switches

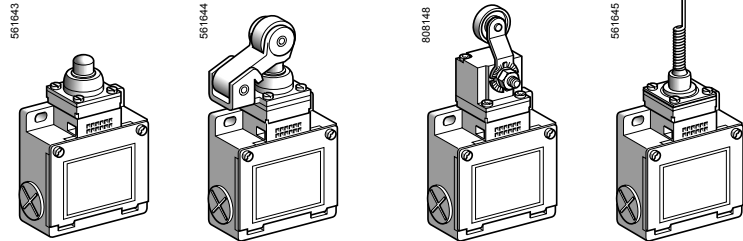
OsiSense XC Standard, Classic format  
Metal, types XCK M, XCK L and XCK ML

1

■ XCK M,  
with 3 cable entries

□ With head for linear movement  
(plunger)

□ With head for rotary movement  
(lever) or multi-directional

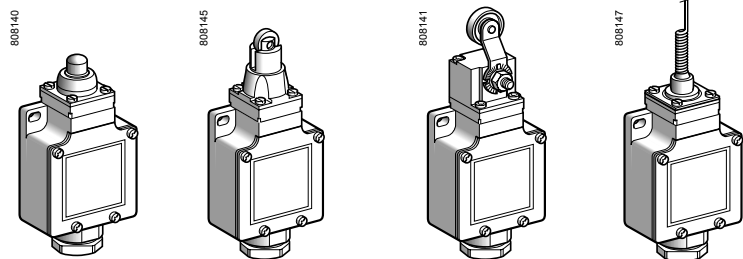


Page 1/76

■ XCK L,  
with 1 cable entry

□ With head for linear movement  
(plunger)

□ With head for rotary movement  
(lever) or multi-directional

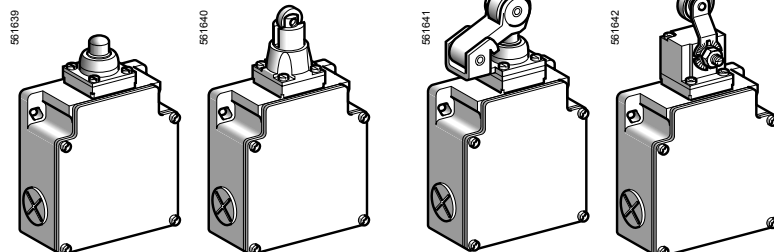


Page 1/78

■ XCK ML,  
with 3 cable entries and 2 x 2-pole contacts

□ With head for linear movement  
(plunger)

□ With head for rotary movement  
(lever)



Page 1/80

## Environment characteristics

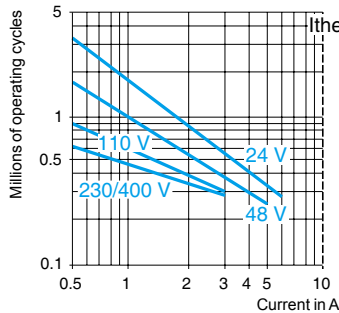
Conformity to standards	Products	IEC 60947-5-1, EN 60947-5-1, UL 508, CSA C22-2 n° 14
	Machine assemblies	IEC 60204-1, EN 60204-1
Product certifications		UL, CSA, CCC (only for XCK M)
Protective treatment	Version	Standard: "TC". Special: "TH"
Ambient air temperature	For operation	- 25...+ 70°C
	For storage	- 40...+ 70°C
Vibration resistance	Conforming to IEC 60068-2-6	25 gn (10...500 Hz)
Shock resistance	Conforming to IEC 60068-2-27	50 gn (11 ms)
Electric shock protection		Class I conforming to IEC 61140 and NF C 20-030
Degree of protection		IP 66 conforming to IEC 60529; IK 05 conforming to EN 50102
Repeat accuracy		<b>XCK ML</b> 0.1 mm; <b>XCK M</b> and <b>XCK L</b> 0.05 mm on the tripping points, with 1 million operating cycles for head with end plunger
Cable entry or connector	Depending on model	<b>XCK M</b> : 3 tapped entries for n° 11 cable gland or tapped ISO M20, or with 1/2" NPT adaptor <b>XCK L</b> : 1 tapped entry incorporating cable gland or 1 entry tapped 1/2" NPT <b>XCK ML</b> : 3 tapped entries for n° 13 cable gland or tapped ISO M20
Materials		Bodies: zamak. Rotary heads: zamak or plastic, depending on product reference. Other heads: plastic

**Contact block characteristics**

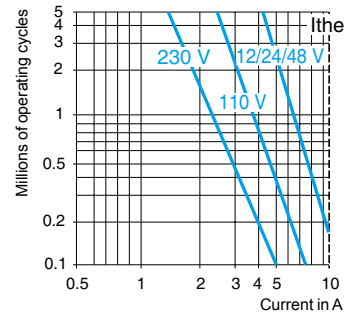
<b>Rated operational characteristics</b>	XE2● P	~ AC-15; A300 (Ue = 240 V, Ie = 3 A); Ithe = 10 A --- DC-13; Q300 (Ue = 250 V, Ie = 0.27 A), conforming to IEC 60947-5-1 Appendix A, EN 60947-5-1
	XE3● P	~ AC-15; B300 (Ue = 240 V, Ie = 1.5 A); Ithe = 6 A --- DC-13; R300 (Ue = 250 V, Ie = 0.1 A), conforming to IEC 60947-5-1 Appendix A, EN 60947-5-1
<b>Rated insulation voltage</b>	XE2● P	Ui = 500 V degree of pollution 3 conforming to IEC 60947-1 Ui = 300 V conforming to UL 508, CSA C22-2 n° 14
	XE3● P	Ui = 400 V degree of pollution 3 conforming to IEC 60947-1 Ui = 300 V conforming to UL 508, CSA C22-2 n° 14
<b>Rated impulse withstand voltage</b>	XE2● P	U imp = 6 kV conforming to IEC 60947-1, IEC 60664
	XE3● P	U imp = 4 kV conforming to IEC 60947-1, IEC 60664
<b>Positive operation</b> (depending on model)		NC contacts with positive opening operation conforming to IEC 60947-5-1 Appendix K, EN 60947-5-1
<b>Resistance across terminals</b>		≤ 25 mΩ conforming to IEC 60255-7 category 3
<b>Short-circuit protection</b>	XE2● P	10 A cartridge fuse type gG (gl)
	XE3● P	6 A cartridge fuse type gG (gl)
<b>Connection</b> (screw clamp terminals)	XE2S P21●1	Clamping capacity, min: 1 x 0.34 mm <sup>2</sup> , max: 2 x 1.5 mm <sup>2</sup>
	XE2N P21●1	Clamping capacity, min: 1 x 0.5 mm <sup>2</sup> , max: 2 x 2.5 mm <sup>2</sup>
	XES P2151L and XEN P2151L	Clamping capacity, min: 1 x 0.34 mm <sup>2</sup> , max: 2 x 1.5 mm <sup>2</sup> or 1 x 2.5 mm <sup>2</sup>
	XE3N P and XE3S P	Clamping capacity, min: 1 x 0.34 mm <sup>2</sup> , max: 1 x 1 mm <sup>2</sup> or 2 x 0.75 mm <sup>2</sup>
<b>Minimum actuation speed</b>		<b>XE2S P21●1, XES P2151L and XE3S P:</b> 0.01 m/minute <b>XE2N P21●1, XEN P2151L and XE3N P:</b> 6 m/minute
<b>Electrical durability</b>		<ul style="list-style-type: none"> <li>■ Conforming to IEC 60947-5-1 Appendix C</li> <li>■ Utilisation categories AC-15 and DC-13</li> <li>■ Maximum operating rate: 3600 operating cycles/hour</li> <li>■ Load factor: 0.5</li> </ul>

AC supply  
50/60 Hz ~  
~ inductive circuit

**XE2S P21●1, XE2S P2141, XES P2151L**



**XE2N P21●1, XEN P2151L**



DC supply ---

Power broken in W for 5 million operating cycles.

Voltage	V	24	48	120
m	W	10	7	4

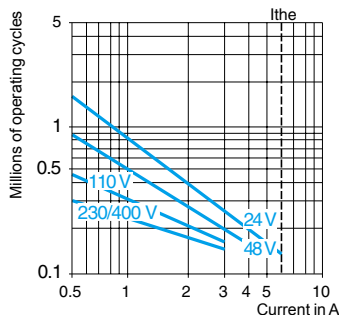
Power broken in W for 5 million operating cycles.

Voltage	V	24	48	120
m	W	13	9	7

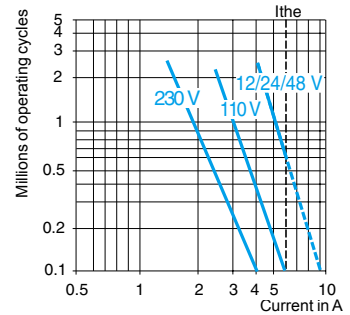
For XE2S P●151 on ~ or ---, NC and NO contacts simultaneously loaded to the values shown with reverse polarity.

AC supply  
50/60 Hz ~  
~ inductive circuit

**XE3S P●●●●**



**XE3N P●●●●**



DC supply ---

Power broken in W for 5 million operating cycles.

Voltage	V	24	48	120
m	W	3	2	1

Power broken in W for 5 million operating cycles.

Voltage	V	24	48	120
m	W	4	3	2