

# Limit Switches

## Osiswitch® Miniature, Metal

### Universal, XCMD

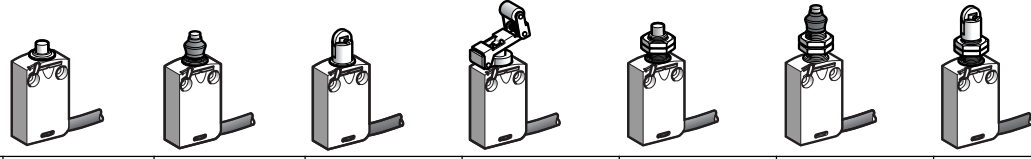
Environment characteristics																															
Conforming to standards	Products	IEC 60947-5-1, EN 60947-5-1, UL 508, CSA C22-2 n° 14																													
	Machine assemblies	IEC 60204-1, EN 60204-1																													
Product certifications	UL, CSA (except products with special cables), CCC																														
Protective treatment	Standard version: "TC"																														
Ambient air temperature	Operation: -25...+70 °C (-13...+158 °F). Storage: -40...+70 °C (-40...+158 °F)																														
Vibration resistance	XCMD snap action: 5 gn. XCMD slow break: 25 gn (10...500 Hz) conforming to IEC 60068-2-6																														
Shock resistance	25 gn (18 ms) conforming to IEC 60068-2-27																														
Electric shock protection	Class I conforming to IEC 61-140 and NF C 20-030																														
Degree of protection	NEMA Types 1, 2, 4, 12, 13 IP 66, IP 67 and IP 68 (1) conforming to IEC 60529 IK 06 conforming to EN 50102																														
Materials	Bodies and heads: Zamak® zinc alloy																														
Repeat accuracy	0.05 mm on the tripping points, with 1 million operating cycles for head with end plunger																														
Protection against prolonged immersion: the test conditions are subject to agreement between the manufacturer and the user.																															
Contact block characteristics																															
Rated operational characteristics	Switches with 2 contacts	~ AC-15; B300 (Ue = 240 V, Ie = 1.5 A) = DC-13; R300 (Ue = 250 V, Ie = 0.1 A), conforming to IEC 60947-5-1 Appendix A, EN 60947-5-1																													
	Switches with 3 and 4 contacts	~ AC-15; C300 (Ue = 240 V, Ie = 0.75 A) = DC-13; R300 (Ue = 250 V, Ie = 0.1 A), conforming to IEC 60947-5-1 Appendix A, EN 60947-5-1																													
	Pre-cabled switches	Ithe = 6 A for 2 contacts, 4 A for 3 contacts, 3 A for 4 contacts																													
	Switches with 4-pin M12 connector	Ui = 250 V, Ie = 3 A maximum, Ithe = 3 A																													
	Switches with 5-pin M12 connector	Ui = 60 V, Ie = 4 A maximum, Ithe = 4 A																													
	Switches with 5-pin 7/8" 16UN connector	Ui = 250 V, Ie = 6 A maximum, Ithe = 6 A																													
Rated insulation voltage	Ui = 400 V degree of pollution 3 conforming to IEC 60947-5-1 Ui = 300 V conforming to UL 508, CSA C22-2 n° 14																														
Rated impulse withstand voltage	U imp = 4 kV conforming to IEC 60947-1, IEC 60664																														
Positive operation (depending on model)	N/C contacts with positive opening operation conforming to IEC 60947-5-1 Appendix K, EN 60947-5-1																														
Resistance across terminals	≤ 25 mΩ conforming to IEC 60255-7 category 3																														
Electric shock protection	6 A cartridge fuse type gG (gl)																														
Minimum actuation speed	Snap action contact: 0.01 m/minute (0.03 ft/minute) Slow break contact: 6 m/minute (19.68 ft/minute)																														
Electrical durability	<ul style="list-style-type: none"> <li>Conforming to IEC 60947-5-1 Appendix C</li> <li>Utilization categories AC-15 and DC-13</li> <li>Maximum operating rate: 3600 operating cycles/hour</li> <li>Load factor: 0.5</li> </ul>																														
	<b>XCMD snap action (N/C + N/O, N/C + N/C, N/C + N/C + N/O, N/C + N/C + N/O + N/O contacts)</b>																														
	<p>a.c. supply ~ 50/60 Hz ~ inductive circuit</p>																														
d.c. supply =	<b>XCMD slow break (N/C + N/O, N/C + N/C + N/O contacts)</b>																														
	<table border="1"> <thead> <tr> <th colspan="5">Power switched in W for 5 million operating cycles</th> </tr> <tr> <th>Voltage</th> <th>V</th> <th>24</th> <th>48</th> <th>120</th> </tr> <tr> <th>mm</th> <th>W</th> <td>3</td> <td>2</td> <td>1</td> </tr> </thead> </table>	Power switched in W for 5 million operating cycles					Voltage	V	24	48	120	mm	W	3	2	1	<table border="1"> <thead> <tr> <th colspan="5">Power switched in W for 5 million operating cycles</th> </tr> <tr> <th>Voltage</th> <th>V</th> <th>24</th> <th>48</th> <th>120</th> </tr> <tr> <th>mm</th> <th>W</th> <td>4</td> <td>3</td> <td>3</td> </tr> </thead> </table>	Power switched in W for 5 million operating cycles					Voltage	V	24	48	120	mm	W	4	3
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### Universal, XCMD, Pre-Cabled

Type of head      Plunger (mounting by the body)      Plunger (mounting by the head)



Type of operator      Metal end plunger      Metal end plunger with elastomer boot      Steel roller plunger      Retractable steel roller lever plunger      M12 with metal end plunger      M16 with metal end plunger with elastomer boot      M12 with steel roller plunger

### Catalog numbers

<b>2-pole N/C + N/O snap action</b> 	<b>XCMD2110L1</b> 	<b>XCMD2111L1</b> 	<b>XCMD2102L1</b> 	<b>XCMD2124L1</b> 	<b>XCMD21F0L1</b> 	<b>XCMD21G1L1</b> 	<b>XCMD21F2L1</b> 
<b>2-pole N/C + N/O break before make, slow break</b> 	<b>XCMD2510L1</b> 	<b>XCMD2511L1</b> 	<b>XCMD2502L1</b> 	<b>XCMD2524L1</b> 	<b>XCMD25F0L1</b> 	<b>XCMD25G1L1</b> 	<b>XCMD25F2L1</b> 
<b>2-pole N/C + N/C snap action</b> 	<b>ZCMD29L1 + ZCE10</b> 	<b>ZCMD29L1 + ZCE11</b> 	<b>ZCMD29L1 + ZCE02</b> 	<b>ZCMD29L1 + ZCE24</b> 	<b>ZCMD29L1 + ZCEF0</b> 	<b>ZCMD29L1 + ZCEG1</b> 	<b>ZCMD29L1 + ZCEF2</b> 
<b>3-pole N/C + N/C + N/O snap action</b> 	<b>ZCMD39L1 + ZCE10</b> 	<b>ZCMD39L1 + ZCE11</b> 	<b>ZCMD39L1 + ZCE02</b> 	<b>ZCMD39L1 + ZCE24</b> 	<b>ZCMD39L1 + ZCEF0</b> 	<b>ZCMD39L1 + ZCEG1</b> 	<b>ZCMD39L1 + ZCEF2</b> 
<b>3-pole N/C + N/C + N/O break before make, slow break</b> 	<b>ZCMD37L1 + ZCE10</b> 	<b>ZCMD37L1 + ZCE11</b> 	<b>ZCMD37L1 + ZCE02</b> 	<b>ZCMD37L1 + ZCE24</b> 	<b>ZCMD37L1 + ZCEF0</b> 	<b>ZCMD37L1 + ZCEG1</b> 	<b>ZCMD37L1 + ZCEF2</b> 
<b>Weight, kg (lb)</b>	0.180 (0.397)	0.180 (0.397)	0.185 (0.408)	0.200 (0.441)	0.195 (0.430)	0.220 (0.485)	0.205 (0.452)
<b>4-pole N/C + N/C + N/O + N/O snap action</b> 	<b>ZCMD41L1 + ZCE10</b> 	<b>ZCMD41L1 + ZCE11</b> 	<b>ZCMD41L1 + ZCE02</b> 	<b>ZCMD41L1 + ZCE24</b> 	<b>ZCMD41L1 + ZCEF0</b> 	<b>ZCMD41L1 + ZCEG1</b> 	<b>ZCMD41L1 + ZCEF2</b> 
<b>Weight, kg (lb)</b>	0.160 (0.353)	0.160 (0.353)	0.165 (0.364)	0.180 (0.397)	0.175 (0.386)	0.200 (0.441)	0.185 (0.408)

**Contact operation**  

 (A) = cam displacement      (P) = positive opening point  
 ☉ N/C contact with positive opening operation, when properly mounted and using a conforming operator

### Characteristics

<b>Switch actuation</b> <b>Type of actuation</b>	On end 	By 30° cam 	On end 	By 30° cam 	
<b>Maximum actuation speed</b>	0.5 m/s (1.64 ft/s)			0.1 m/s (0.33 ft/s)	
<b>Minimum force or torque</b>	For tripping: 8.5 N (1.91 lb) For positive opening: 42.5 N (9.55 lb)	7 N (1.57 lb) 35 N (7.87 lb)	2.5 N (0.56 lb) 12.5 N (2.81 lb)	8.5 N (1.91 lb) 42.5 N (9.55 lb)	7 N (1.57 lb) 35 N (7.87 lb)
<b>Cabling</b>	PvR cable, 1 m (3.3 ft) long: 5 x 0.75 mm <sup>2</sup> for 2-pole contact versions; 7 x 0.5 mm <sup>2</sup> for 3-pole contact versions; 9 x 0.34 mm <sup>2</sup> for 4-pole contact versions. For other cable lengths, see page 42.				

NOTE: For more information, consult pages 38–40.

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### Universal, XCMD, Pre-Cabled

Type of head	Rotary (mounting by the body)				Multi-directional
Type of operator	Thermoplastic roller lever	Steel roller lever	Roller lever with ball bearing mounted roller	Variable length thermoplastic roller lever	Cat's whisker (1)
<b>Catalog numbers</b>					
2-pole N/C + N/O snap action	 XCMD2115L1	 XCMD2116L1	 XCMD2117L1	 XCMD2145L1	 XCMD2106L1
2-pole N/C + N/O break before make, slow break	 XCMD2515L1	 XCMD2516L1	 XCMD2517L1	 XCMD2545L1	 XCMD2506L1
2-pole N/C + N/C snap action	 ZCMD29L1 + ZCE01 + ZCY15	 ZCMD29L1 + ZCE01 + ZCY16	 ZCMD29L1 + ZCE01 + ZCY17	 ZCMD29L1 + ZCE01 + ZCY45	 ZCMD29L1 + ZCE06
3-pole N/C + N/C + N/O snap action	 ZCMD39L1 + ZCE01 + ZCY15	 ZCMD39L1 + ZCE01 + ZCY16	 ZCMD39L1 + ZCE01 + ZCY17	 ZCMD39L1 + ZCE01 + ZCY45	 ZCMD39L1 + ZCE06
3-pole N/C + N/C + N/O break before make, slow break	 ZCMD37L1 + ZCE01 + ZCY15	 ZCMD37L1 + ZCE01 + ZCY16	 ZCMD37L1 + ZCE01 + ZCY17	 ZCMD37L1 + ZCE01 + ZCY45	 ZCMD37L1 + ZCE06
Weight, kg (lb)	0.220 (0.485)	0.220 (0.496)	0.220 (0.485)	0.230 (0.507)	0.180 (0.397)
4-pole N/C + N/C + N/O + N/O snap action	 ZCMD41L1 + ZCE01 + ZCY15	 ZCMD41L1 + ZCE01 + ZCY16	 ZCMD41L1 + ZCE01 + ZCY17	 ZCMD41L1 + ZCE01 + ZCY45	 ZCMD41L1 + ZCE06
Weight, kg (lb)	0.200 (0.441)	0.205 (0.452)	0.200 (0.441)	0.210 (0.463)	0.160 (0.353)
Contact operation	contact closed (A) = cam displacement contact open (P) = positive opening point				N/C contact with positive opening operation, when properly mounted and using a conforming operator
Characteristics	1. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mountings.				
Switch actuation	By 30° cam				By any moving part
Type of actuation					
Maximum actuation speed	1.5 m/s (4.92 ft/s)				1 m/s (3.28 ft/s)
Minimum force or torque	For tripping	0.1 N*m (0.89 lb-in)			
	For positive opening	0.5 N*m (4.43 lb-in)			
Cabling	PVR cable, 1 m (3.3 ft) long: 5 x 0.75 mm <sup>2</sup> for 2-pole contact versions; 7 x 0.5 mm <sup>2</sup> for 3-pole contact versions, 9 x 0.34 mm <sup>2</sup> for 4-pole contact versions. For other cable lengths, see page 42.				

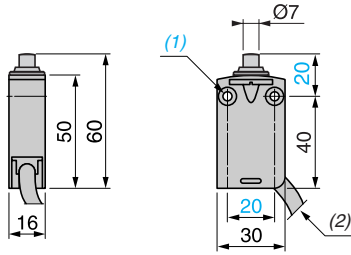
NOTE: For more information, consult pages 38–40.

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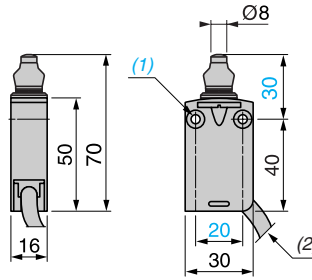
## Osiswitch® Miniature, Metal

### Universal, XCMD, Pre-Cabled—Dimensions

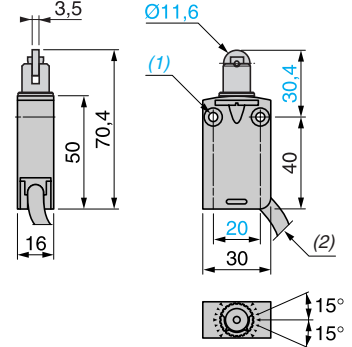
XCMD2•10L1



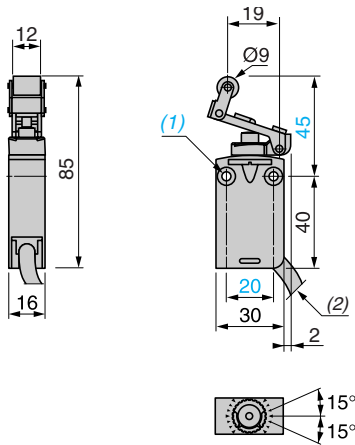
XCMD2•11L1



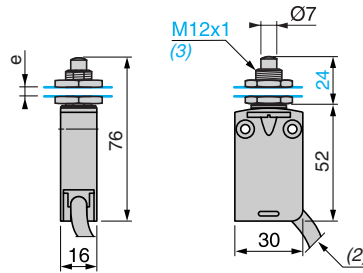
XCMD2•02L1



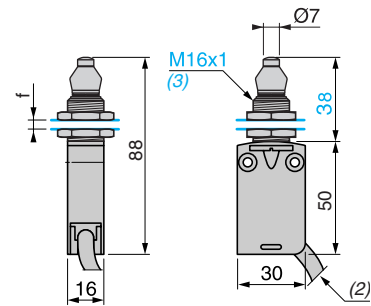
XCMD2•24L1



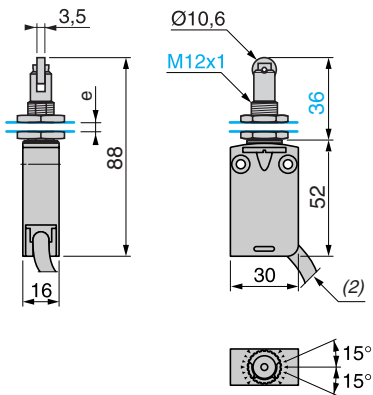
XCMD2•F0L1



XCMD2•G1L1



XCMD2•F2L1



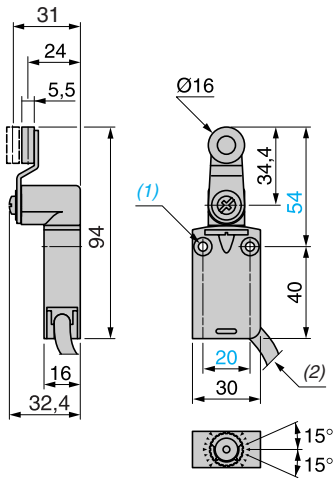
1. 2 mounting holes  $\varnothing$  4.2 mm (0.17 in.), counterbored  $\varnothing$  8 mm (0.31 in.) by 4 mm (0.16 in.) deep.
2. Overall diameter of cable 7.5 mm (0.30 in.).
3. Mounting nut thickness 3.5 mm (0.14 in.).
- e: 8 mm (0.31 in.) max, panel cut-out  $\varnothing$  12.5 mm (0.49 in.).
- f: 8 mm (0.31 in.) max, panel cut-out  $\varnothing$  16.5 mm (0.65 in.).

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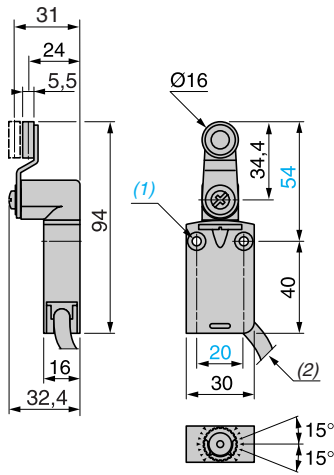
## Osiswitch® Miniature, Metal

### Universal, XCMD, Pre-Cabled—Dimensions

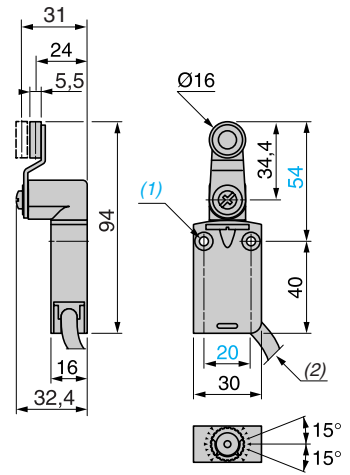
XCMD2•15L1



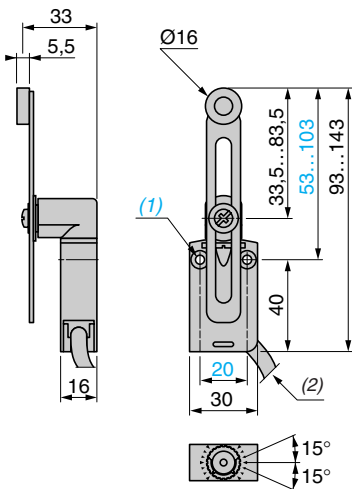
XCMD2•16L1



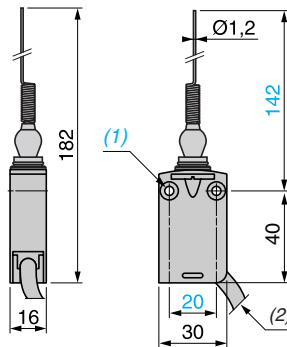
XCMD2•17L1



XCMD2•45L1



XCMD2•06L1



- 1. 2 mounting holes  $\varnothing 4.2$  mm (0.17 in.), counterbored  $\varnothing 8$  mm (0.31 in.) by 4 mm (0.16 in.) deep.
- 2. Overall diameter of cable 7.5 mm (0.30 in.).
- e. 8 mm (0.31 in.) max, panel cut-out  $\varnothing 12.5$  mm (0.49 in.).
- f. 8 mm (0.31 in.) max, panel cut-out  $\varnothing 16.5$  mm (0.65 in.).