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Limit Switches

Catalog
March
07

File 9007 / XC

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Limit Switches
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Osiswitch® Limit Switches

Limit Switches
Selection Guide
Osiswitch® Universal

Design		Miniature	Compact		
					
Catalog number		**XCMD**	**XCKD**	**XCKP**	**XCKT**
Enclosure		Metal		Plastic, double insulated	
Features		Mounting by the body or by the head			
Modularity		Head, body and connection modularity			Head and body modularity
CENELEC conformity		—	EN 50047		EN 50047 compatible
Body dimensions (w x h x d), mm (in.)		30 x 50 x 16 (1.18 x 1.97 x 0.63)	31 x 65 x 30 (1.22 x 2.56 x 1.18)		58 x 51 x 30 (2.28 x 2.01 x 1.18)
Head		Linear movement (plunger) Rotary movement (lever) Rotary movement, multi-directional Same heads for ranges XCMD, XCKD, XCKP and XCKT			
Contact blocks	2 snap action contacts with positive opening operation	**N/C + N/O**; **N/C + N/C**			N/C + N/O
	3 snap action contacts with positive opening operation	**N/C + N/C + N/O**	**N/C + N/C + N/O**; **N/C + N/O + N/O**		—
	4 snap action contacts with positive opening operation	**N/C + N/C + N/O + N/O**	—		
	2 slow break contacts with positive opening operation	**N/C + N/O** break before make	**N/C + N/O** break before make; **N/O + N/C** make before break; **N/C + N/C** simultaneous		
	2 slow break contacts	—	**N/O + N/O** simultaneous		
	3 slow break contacts with positive opening operation	**N/C + N/C + N/O** break before make	**N/C + N/C + N/O** break before make; **N/C + N/O + N/O** break before make		—
Insulation voltage (Ui) / thermal current (Ithe)		Pre-cabled 2 contacts: 400 V/6 A 3 contacts: 400 V/4 A 4 contacts: 400 V/3 A	Screw terminal 2 contacts: 500 V/10 A 3 contacts: 400 V/6 A		Screw terminal 2 contacts: 500 V/10 A
	Connector	Integral M12, 4-pin: 250 V/3 A Integral M12, 5-pin: 60 V/4 A Remote 7/8" 16UN: 250 V/6 A	Integral M12, 5-pin: 60 V/4 A	Integral M12, 4-pin: 250 V/3 A	—
Degree of protection		NEMA Types 1, 2, 4X, 6, 12 IP 66, IP 67, IP 68, IK 06	NEMA Types 1, 2, 4, 6, 12, 13 IP 66, IP 67, IK 06	NEMA Types 1, 2, 4, 6, 6P, 12, 13 IP 66, IP 67, IK 04	NEMA Types 1, 2, 4, 6, 12, 13 IP 66, IP 67, IK 04
Connection	**Screw terminals**	—	1 entry for ISO M16 or M20, PG 11, PG 13 conduit thread or 1/2" NPT, PF 1/2		2 entries for ISO M16 or PG 11 conduit thread or 1/2" NPT (using adapter
	Pre-cabled	Integral: No Remote: Yes	—		
	Connector	Integral or remote M12 or remote 7/8" 16UN	Integral M12		—
Page		44	56 and 60	62 and 66	68

Limit Switches
Selection Guide
Osiswitch® Optimum and Application

Design		Miniature Optimum	Compact Application: with manual reset		
					
Catalog number		**XCMN**	**XCDR**	**XCPR**	**XCTR**
Enclosure		Plastic, double insulated	Metal	Plastic, double insulated	
Features		Mounting by the body or by the head	Mounting by the body		
Modularity		—			
CENELEC conformity		—			
Body dimensions (w x h x d), mm (in.)		30 x 50 x 16 (1.18 x 1.97 x 0.63)	31 x 65 x 30 (1.22 x 2.56 x 1.18)		58 x 51 x 30 (2.28 x 2.01 x 1.18)
Head		Linear movement (plunger) Rotary movement (lever) Rotary movement, multi-directional	Linear movement (plunger) Rotary movement (lever) Same heads for ranges XCDR, XCPR and XCTR		
Contact blocks	2 snap action contacts with positive opening operation	N/C + N/O			
	3 snap action contacts with positive opening operation	—			
	4 snap action contacts with positive opening operation	—			
	2 slow break contacts with positive opening operation	—	**N/C + N/O** break before make		
	2 slow break contacts	—			
	3 slow break contacts with positive opening operation	—			
Insulation voltage (Ui) / thermal current (Ithe)		Screw terminal 2 contacts: 400 V/6 A	Screw terminal 2 contacts: 500 V/10 A		
	Connector	—			
Degree of protection		NEMA Types 1, 2, 13 IP 65, IK 04	IP 66, IP 67, IK 04		
Connection	**Screw terminals**	—	1 entry for ISO M20 or PG 13 conduit thread or 1/2" NPT		2 entries for ISO M16 or PG 11 conduit thread or 1/2" NPT (using adapter)
	Pre-cabled	Yes	—		
	Connector	—			
Page		52	76	78	80

Limit Switches
Selection Guide
Osiswitch® Classic

Design		Classic		
				
Catalog number		**XCKM**	**XCKL**	**XCKJ**
Enclosure		Metal		
Features		3 conduit entries		Fixed or plug-in body, -40 °C (-40 °F) or +120 °C (+248 °F) versions
Modularity		Head + Body + Operator		
CENELEC or DIN conformity		—		EN 50041
Body dimensions (w x h x d), mm (in.)		63 x 64 x 30 (2.48 x 2.52 x 1.18)	52 x 72 x 30 (2.05 x 2.83 x 1.18)	40 x 77 x 44 (1.57 x 3.03 x 1.73) 42.5 x 84 x 36 (1.67 x 3.31 x 1.42)
Head		Linear movement (plunger) Rotary movement (lever) Rotary movement, multi-directional		
Contact blocks	2 snap action contacts with positive opening operation	N/C + N/O; N/C + N/C	N/C + N/O	N/C + N/O; N/C + N/C
	3 snap action contacts with positive opening operation	N/C + N/C + N/O; N/C + N/O + N/O		
	C/O snap action contacts	—		2 C/O
	C/O slow break contacts	—		
	2 slow break contacts with positive opening operation	**N/C + N/O** break before make **N/O + N/C** make before break **N/C + N/C** simultaneous		
	2 slow break contacts	**N/O + N/O** simultaneous		
	3 slow break contacts with positive opening operation	**N/C + N/C + N/O** break before make; **N/C + N/O + N/O** break before make		
Insulation voltage (Ui) / thermal current (Ithe)		Screw terminal 2 contacts: 500 V/10 A 3 contacts: 400 V/6 A		
		—		Connector Integral M12, 5-pin: 60 V/4 A Integral 7/8" 16UN: 250 V/6 A
Degree of protection		NEMA Types 1, 2, 4, 6, 6P, 12, 13 IP 66, IK 06		NEMA Types 1, 2, 4, 12 IP 66 IK 07
Connection	Screw terminals (cable entry)	3 entries for ISO M20 or PG 11 conduit thread or 1/2" NPT	1 entry incorporating cable entry or tapped 1/2" NPT	1 entry for ISO M20 or PG 13 conduit thread or 1/2" NPT
	Connector	—	—	Integral M12 or 7/8" 16UN
Page		82	82	98

Limit Switches
Selection Guide
Osiswitch® Classic, Application, and Miniature Snap Switches

Design	Classic	Application: for installations requiring electrical redundancy	Application: for lifting and materials handling equipment or very severe applications	Sub-miniature, miniature: applications requiring high precision and a low operating force
				

Catalog number		XCKS	XCKML	XCR, XC1AC	XEP, XCO
Enclosure		Plastic, double insulated	Metal	Metal or polyester	Plastic
Features		—	2 sets of contacts	—	Depending on type
Modularity		Head + Body + Operator		Fixed composition	Depending on type, fixed composition or contact and operator
CENELEC or DIN conformity		EN 50041	—		
Body dimensions (w x h x d), mm (in.)		40 x 72.5 x 36 (1.57 x 2.85 x 1.42)	72 x 81 x 36 (2.83 x 3.19 x 1.42)	Depending on type	DIN 41635, depending on type
Head		Linear movement (plunger) Rotary movement (lever) Rotary movement, multi-directional	Linear movement (plunger) Rotary movement (lever)		Linear movement (plunger)
Contact blocks	2 snap action contacts with positive opening operation	**N/C + N/O**; **N/C + N/C**	2 x **N/C + N/O** contact blocks	Depending on type	—
	3 snap action contacts with positive opening operation	**N/C + N/C + N/O**; **N/C + N/O + N/O**	—		
	C/O snap action contacts	2 C/O	—	Depending on type	1 single-pole contact
	C/O slow break contacts	—		Depending on type	—
	2 slow break contacts with positive opening operation	**N/C + N/O** break before make **N/O + N/C** make before break **N/C + N/C** simultaneous	2 x **N/C + N/O** break before make contact blocks	Depending on type	—
	2 slow break contacts	**N/O + N/O** simultaneous	—		
	3 slow break contacts with positive opening operation	**N/C + N/C + N/O** break before make **N/C + N/O + N/O** break before make	—		
Insulation voltage (Ui) / thermal current (Ithe)		Screw terminal 2 contacts: 500 V/10 A 3 contacts: 400 V/6 A	Screw terminal 2 contacts: 500 V/10 A		Depending on type
		—			
Degree of protection		IP 65 IK 03	NEMA Types: 1, 2, 4, 6, 6P, 12, 13 IP 66 IK 06	Depending on type: IP 66, IK 05; IP 65, IK 05; or IP 54, IK 05	Depending on type
Connection	Screw terminals (cable entry)	1 entry for ISO M20 or PG 13 conduit thread	3 entries for ISO M20 or PG 13 conduit thread; or PG 13 to 1/2" NPT with adapter	Depending on type: 1 or 3 entries for ISO M20 or PG 13 conduit thread	Depending on type: by tags or pre-wired
	Connector	—			
Page		126	82	136 and 144	26

Limit Switches
Selection Guide
Class 9007 Industrial Snap Switches and Miniature Industrial Switches

Design	Industrial Snap Switch	Miniature Switch	Miniature Enclosed Reed	Heavy Duty Industrial, Precision Oiltight
				
Catalog Number Prefix	**9007A 9007C**	**9007MS 9007ML**	**9007XA**	**9007AW**
Description	Industrial snap switches with or without operators	Miniature enclosed switches, potted and pre-wired with cable. Unique rotary head. 9007 ML has double break contacts.	Miniature enclosed switches, potted and pre-wired with cable. Reed contacts for superior low-energy switching.	Precision oil tight enclosed switches with unique features, micrometer adjustable and low temperature operation.
Enclosure Material	Plastic	Metal bodies, metal head	Metal bodies, metal head	Metal bodies, metal heads
Enclosure Rating	None	NEMA: Types 1, 2, 4, 6, 6P, 12, 13 IEC: IP67	NEMA: Types 1, 2, 4, 6, 6P, 12, 13	NEMA: Types 1, 2, 4, 6, 6P, 12, 13
Approximate Body Dimensions, mm (in.)	29.0 x 63.5 x 21.0 (1.14 x 2.5 x 0.83)	40.1 x 44.4 x 15.8 (1.58 x 1.75 x 0.62)	40.1 x 44.2 x 16.0 1.58 x 1.74 x 0.63)	36.6 x 98.5 x 63.5 (1.44 x 3.88 x 2.5)
Heads	Linear	Linear or Rotary	Linear or Rotary	Linear or Rotary
Contact Blocks				
N.C. + N.O. snap action	X	X	N.O. or N.C.	X
N.C. + N.O. break before make, slow break				
N.O. + N.C. make before break, slow break				
N.C. + N.C. simultaneous, slow break				
N.O. + N.O. simultaneous, slow break				
C/O snap action				
C/O slow break				
N.C. + N.C. 2-step, slow break				
N.O. + N.O. 2-step, slow break				
N.C. + N.C. snap action				
N.O. + N.C. slow make, slow break				
Cabling		Pre-wired cable, M12 Connector option available.	Pre-wired cable.	
Temperature Range	-65 to +221 °F (-54 to +105 °C)	-40 to +221 °F (-40 to +105 °C)	-20 to + 140 °F (-29 to +60 °C)	0 to +185 °F (-17.8 to 85 °C) Lever operated: -65 to +185 °F (-54 to 85 °C)
Additional Features	A variety of operators are available, page 152	Bottom or side cable entry. Full range of operating heads, page 156.	Bottom cable entry. Three common operating heads, page 160.	Most common operating heads. Micrometer adjustable push rod plunger. Uses 9007C levers, page 190.

Limit Switches
Selection Guide
Class 9007 Type C Heavy Duty Industrial

Applications	Material handling—mechanical conveying, automotive, machine tool, packaging			Hazardous application locations: gases (explosion), dust environment.
Design	**Standard body type 9007C•••••**	**Standard body reed contacts**	**Compact body type 9007C52••**	**Hazardous location body type 9007CR••••**
					
Catalog number	**9007C54••• 9007C62••• 9007C68••• 9007C66•••**	**9007C84••• 9007C86•••**	**9007C52••**	**9007CR53•• 9007CR61•• 9007CR65•• 9007CR67••**
Enclosure	Metal, diecast, zinc alloy			
Features	Plug-in body			Non-plug-in body
Factory modifications (Forms)	See pages 176 to 180			
Modularity	Head + body + lever			
Conforming to standards	NEMA 250, EN 60947-1, EN 60947-5-1, IEC 60947, UL 508, C22-2-14-95, CE conformity documentation			NEMA 250, EN 60947-1, EN 60947-5-1, IEC 60947, UL 508, C22-2-14-95, CE conformity documentation
Product certifications	UL, CSA, CE			
Body dimensions (w x h x d), mm (in.) with rotary head	39 x 102 x 45 (1.54 x 4.02 x 1.77)		39 x 80 x 45 (1.54 x 3.15 x 1.77)	69 x 156 x 53 (2.72 x 6.14 x 2.10)
Head	Linear movement (plunger) Rotary movement (lever) Multi-directional movement (wobble stick, cat whisker)			
Contact blocks — **Snap action contacts**	**9007C54•••** 1 N.O. + 1 N.C.	Reed contacts 1 N.O. or 1 N.C.	1 N.O. + 1 N.C.	**9007CR53••** 1 N.O. + 1 N.C.
	9007C62••• 2 N.O. + 2 N.C.			**9007CR61••** 2 N.O. + 2 N.C.
	9007C68••• 2 N.O. + 2 N.C. neutral position			**9007CR65••** 2 N.O. + 2 N.C. neutral position
	9007C66••• 2 N.O. + 2 N.C. two stage			**9007CR67••** 2 N.O. + 2 N.C. two stage
Contact blocks — **Direct opening (positive opening)**	9007C•••• Y1561 (→) Plunger and lever heads only Single pole only		9007C•••• Y1561 (→) Single pole only	9007CR•••• Y1561 (→) Single pole only
Rated insulation voltage	600 V		—	
Insulation voltage (Ui)— top half of body	600 V Except: 9007CO62, 9007CO66, 9007CO68 (Ui = 250 V) and 9007C84, 9007C86 (Ui = 125 V)		600 V	600 V Except: 9007CR63, 9007CR65, 9007CR67 (Ui = 250 V)
Thermal current (Ithe)— top half of body	10 A Excepted: 9007CO84, 9007CO86 (2.5 A)		10 A	10 A
Degree of protection	IP 67 conforming to IEC 60529, NEMA Types 2, 4, 6, 6P, 12, 13		IP 67 conforming to IEC 60529 NEMA Types 2, 4, 6, 6P, 12, 13,	NEMA Types 2, 4, 6P, 7, 9, 13
Connection *(1)*	Cable entry or connector Depending on model: 1/2"-14 NPT, M20 x 1.5 ISO cable entry, 5-pin mini connector.		Cable entry or connector Depending on model: 1/2"-14 NPT, M20 X 1.5 ISO cable entry, 5 pin mini connector.	Cable entry or connector Depending on model: 1/2"-14 NPT, M20 X 1,5 ISO cable entry, 3/4 14 NPT available.
Page	164		172	198

1. A wide range lof connectors are available. Contact your local field office.

Limit Switches
Selection Guide
Severe Duty Mill and Foundry Switches

Applications	Mill	Mill	Mill	Mill
Design	**9007T Convertible sequence**	**L100 Fixed sequence**	**L14 Single Cable Pulls Fixed sequence**	**L525 Belt Conveyor Fixed sequence**
				
Catalog number	**9007T•••**	**L100•••**	**L14**	**L525**
Enclosure	Metal	Metal	Metal	Metal
Features	Extra heavy duty contact ratings	Extra heavy duty contact ratings	Extra heavy duty contact ratings	Extra heavy duty contact ratings
Factory modifications (Forms)	Page 221	Page 237	Page 237	Page 237
Conforming to standards	NEMA A600 UL508	NEMA A600 UL508	NEMA A600 UL508	NEMA A600 UL508
Product				
Product certifications	UL Listed, CSA Certified	UL Listed, CSA Certified	UL Listed, CSA Certified	UL Listed, CSA Certified
Body dimensions (w x h x d), mm (in.) surface mounting	58.7 x 114.3 x 64.5 (2.31 x 4.5 x 2.54)	58.7 x 126 x 53.3 (2.31 x 4.95 x 2.10)	58.7 x 126 x 53.3 (2.31 x 4.95 x 2.10)	58.7 x 126 x 53.3 (2.31 x 4.95 x 2.10)
Head	Rotary movement (lever)	Rotary movement (lever)	Rotary movement (lever) *(3)*	Rotary movement (lever) *(3)*
Contact blocks — **Snap action contacts** *(1)*	1 N.C. + 1 N.O.	1 N.C. + 1 N.O.	1 N.C. + 1 N.O.	1 N.C. + 1 N.O.
Contact blocks — **Sequences**	Convertible	Fixed	Fixed	Fixed
Rated insulation voltage	600 V	600 V	600 V	600 V
Thermal current (Ithe)	20 A ac/dc	20 A ac, 5 A dc	20 A ac, 5 A dc	20 A ac, 5 A dc
Degree of protection	NEMA Types 1, 2, 4, 12, 13 IP65, 66, 67	NEMA Types 1, 4, 13 IP65, 66	NEMA Types 1, 4, 13 IP65, 66	NEMA Types 1, 4, 13 IP65, 66
Connection *(2)*	Cable entry or connector 1/2" NPT (metric available)	Cable entry or connector 1/2" NPT (metric available)	Cable entry or connector 1/2" NPT (metric available)	Cable entry or connector 1/2" NPT (metric available)
Presentation, Applications and Characteristics	Page 216	Page 228	Page 232	Page 233
Interpretation of Catalog Numbers	Page 239	Page 239	Page 239	Page 239

1. For other contact options see page 216.
2. A wide range lof connectors are available. Contact your local field office.
3. Lever arms are optional and must be ordered separately.

Limit Switches
Selection Guide
Severe Duty Mill and Foundry Switches

Applications	Foundry	Foundry	Mill and Foundry
Design	**9007FT Convertible sequence**	**L300 Fixed sequence**	**L2153 Dual Pull Stop Fixed sequence**

Catalog number		9007FT•••	L300•••	L2153
Enclosure		Metal	Metal	Metal
Features		Designed specifically for rough foundry applications	Designed specifically for rough foundry applications	Extra heavy duty contact ratings
Factory modifications (Forms)		Page 221	Page 237	Page 237
Conforming to standards		NEMA A600 UL508	NEMA A600 UL508	NEMA A600 UL508
Product				
Product certifications		UL Listed, CSA Certified	UL Listed, CSA Certified	UL Listed, CSA Certified
Body dimensions (w x h x d), mm (in.) surface mounting		58.7 x 114.3 x 86.6 (2.31 x 4.5 x 3.41)	58.7 x 126 x 53.3 (2.31 x 4.95 x 2.10)	58.7 x 126 x 53.3 (2.31 x 4.95 x 2.10)
Head		Rotary movement (lever)	Rotary movement (lever)	Rotary movement (lever) *(2)*
Contact blocks	**Snap action contacts ♦**	1 N.C. + 1 N.O.	1 N.C. + 1 N.O.	1 N.C. + 1 N.O.
	Sequences	Convertible	Fixed	Fixed
Rated insulation voltage		600 V	600 V	600 V
Thermal current (Ithe)		20 A ac/dc	20 A ac, 5 A dc	20 A ac, 5 A dc
Degree of protection		NEMA Types 1, 2, 4, 12, 13 IP65, 66, 67	NEMA Types 1, 4, 13 IP65, 66	NEMA Types 1, 4, 13 IP65, 66
Connection *(1)*		Cable entry or connector 1/2" NPT (metric available)	Cable entry or connector 1/2" NPT (metric available)	Cable entry or connector 1/2" NPT (metric available)
Presentation, Applications and Characteristics		Page 218	Page 230	Page 232
Interpretation of Catalog Numbers		Page 239	Page 239	Page 239

1. A wide range lof connectors are available. Contact your local field office.
2. Lever arms are optional and must be ordered separately.

Limit Switches
Selection Guide
Applications by Market Segment

Crane and Hoist
- Overhead Cranes
- Transport Systems

Mill and Foundry
- Iron and Steel
- Cement and Glass

Process Machinery
- Machine Tools
- Plastic, Rubber, Molding
- Printing
- Textile
- Pulp, Paper, Wood

Material Handling
- Conveyance
- Carousels
- Automatic Storage/Retrieval

Packaging Machinery
- Packaging Machines
- Shrink Wrap

Food and Beverage Machinery
- Bottling
- Canning

Simple Machines
- Transportation Wash
- Light Handling
- Assembly Stations
- General Purpose

Electric Lifts
- Lifting Platforms
- Elevators
- Escalators

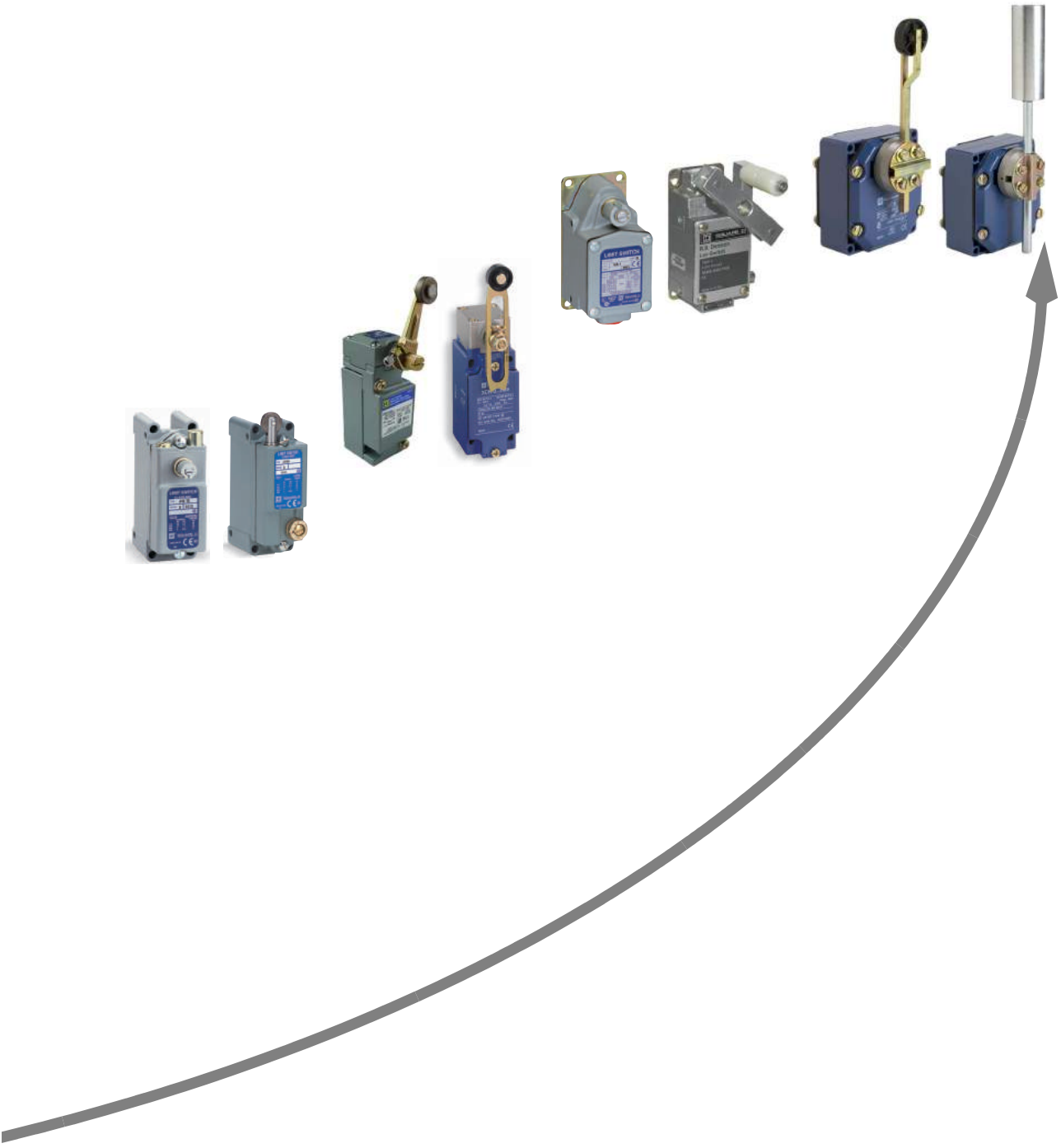
NOTE: Special electrical options available for:
• Low current switching for programmable controllers
• Hazardous locations

XCKP
XCKT
XCKD

XCKM
XCKL
XCKML

XCMD
9007MS/ML
9007XA

XCKS



9007AW | **XCKJ 9007C** | **L100/L300 9007T/FT** | **XCR 9007CLS**

Introduction

Electromechanical detection

Limit switches are used in all automated installations and also in a wide variety of applications, due to the numerous advantages inherent to their technology.
They transmit data to the logic processing system regarding:

- presence/absence
- passing
- positioning
- end of travel

Simplicity of installation, advantages

From an electrical viewpoint

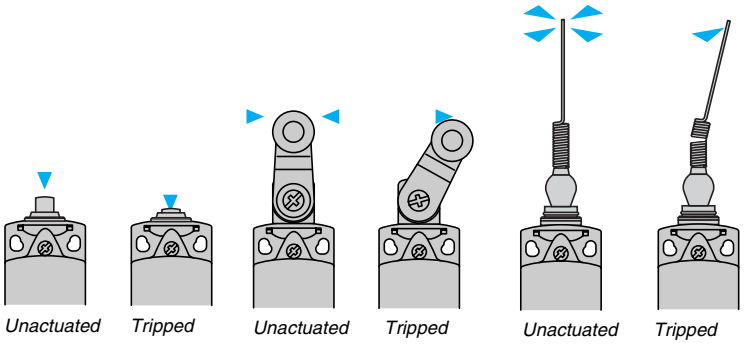
- galvanic separation of circuits,
- models suitable for low power switching, combined with good electrical durability,
- very good short-circuit withstand in coordination with appropriate fuses,
- total immunity to electromagnetic interference,
- high rated operational voltage.

From a mechanical viewpoint

- N/C contacts with positive opening operation,
- high resistance to the different ambient conditions encountered in industry (standard tests and specific tests under laboratory conditions),
- high repeat accuracy, up to 0.01 mm on the tripping points.

Detection movements

- Linear movement (plunger)
- Rotary movement (lever)
- Multi-directional movement



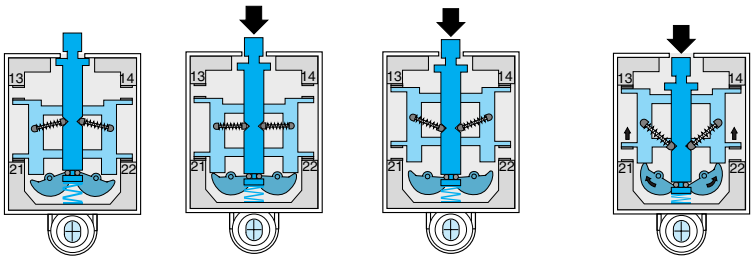
Terminology

Rated value of a quantity	• This replaces the term “nominal value”. • It is the fixed value for a specific function.
Utilization categories	• AC-15 replaces AC-11: control of an electromagnet on a.c., test 10 Ie/Ie. • AC-12: control of a resistive load on a.c. or static load isolated by opto-coupler. • DC-13 replaces DC-11: control of an electromagnet on d.c., test Ie/Ie.
Switching capacity	• Ithe is no longer a rated value but a conventional current used for heating tests. **Example**: for category A300 the corresponding operational current, Ie maximum, is 6 A-120 V or 3 A-240 V, the equivalent Ithe being 10 A.
Positive opening travel	• Minimum travel from the initial movement of contact actuator to the position required to accomplish positive opening operation.
Positive opening force	• The force required on the contact actuator to accomplish positive opening operation.
Positive opening operation	• A limit switch complies with this specification when all the closed contact elements of the switch can be changed, with certainty, to the open position (no flexible link between the moving contacts and the operator of the switch, to which an actuating force is applied). • All limit switches incorporating either a slow break contact block or a snap action N/C + N/O (form Zb), N/C + N/O + N/O, N/C + N/C + N/O, N/C + N/C + N/O + N/O contact block are positive opening operation, in complete conformity with standard IEC 60947-5-1 Appendix K.

Contact blocks

Snap action contacts

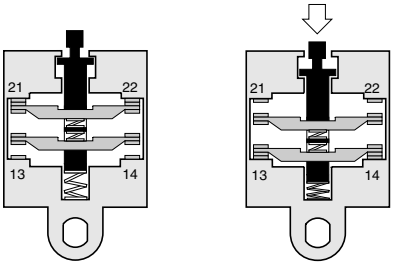
- Snap action contacts are characterized by different tripping and reset points (differential travel).
- The displacement speed of the moving contacts is not related to the speed of the operator.
- This feature ensures satisfactory electrical performance in applications involving low speed actuators.



Unactuated state *Approach travel* *Contact change of state* *Positive opening*

Slow break contacts

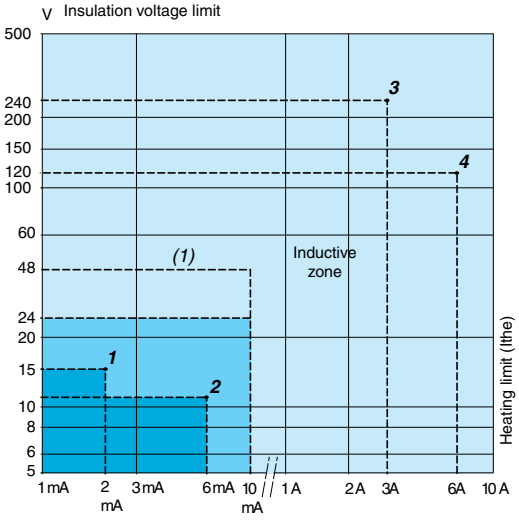
- Slow break contacts are characterized by identical tripping and resetting points.
- The displacement speed of the moving contacts is equal, or proportional, to the speed of the operator—which must not be less than 0.1 m/s, or 6 m/minute (0.33 ft/s, or 19.68 ft/minute).
- The opening distance also depends on the distance traveled by the operator.



Electrical durability for normal loads

- Normally, for inductive loads, the current value is less than 0.1 A (sealed), i.e. values of 3 to 40 VA sealed and 30 to 1000 VA inrush, depending on the voltage.
  For this type of application the electrical durability exceeds 10 million operating cycles.

Application example: **XCKJ161** + **LC1D12••••** (7 VA sealed, 70 VA inrush).
Electrical durability = 10 million operating cycles.



Switching capacity

1. Normal industrial PLC input type 1
2. Normal industrial PLC input type 2
3. Switching capacity conforming to IEC 60947-5-5, utilization category AC-15, DC-13

A300	240 V	3 A	B300	240 V	1.5 A
Q300	250 V	0.27 A	R300	250 V	0.13 A

4. Switching capacity conforming to IEC 60947-5-1, utilization category AC-15, DC-13

A300	120 V	6 A	B300	120 V	3 A
Q300	125 V	0.55 A	R300	125 V	0.27 A

Electrical durability for small loads

- The use of limit switches with programmable controllers is becoming more common.
- With small loads, limit switches offer the following levels of reliability:
- failure rate of less than 1 for 100 million operating cycles using snap action contacts (contacts XE2SP).
- failure rate of less than 1 for 20 million operating cycles using slow break contacts (contacts XE•NP and XE3SP).
- failure rate of less than 1 for 5 million operating cycles using contacts XCMD.

Range of use			
Standard contacts Continuous service (frequent switching)	XE2SP2151, P3151		
	XE2NP••••		
	Contacts of XCMD, XE3•P••••		
Gold flashed contacts on resistive load	Occasional service Infrequent switching, ⩽ 1 operating cycle/day and/or corrosive atmosphere	(1)	

1. Usable up to 48 V/10 mA.

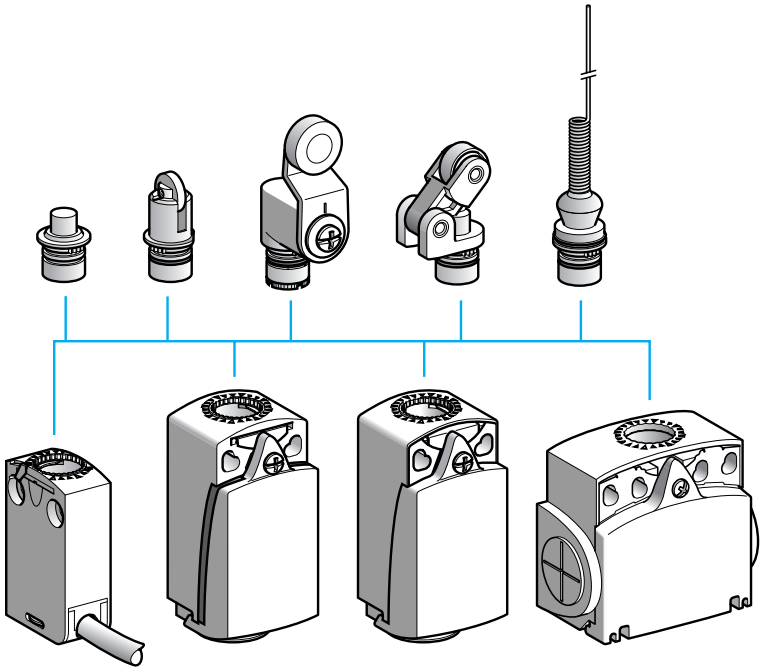
Principle

Innovation through modularity

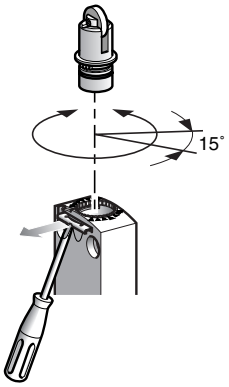
- The Miniature design XCMD and Compact design XCKD, XCKP and XCKT product range family benefits from the **Osi**concept™ principle: **O**ffering **s**implicity through **i**nnovation.
- A first in worldwide detection for improving productivity.
  A complete offer for resolving the most commonly encountered detection problems:
  - — product selection simplified,
  - — product availability simplified,
  - — installation and setup simplified,
  - — maintenance simplified.

Heads

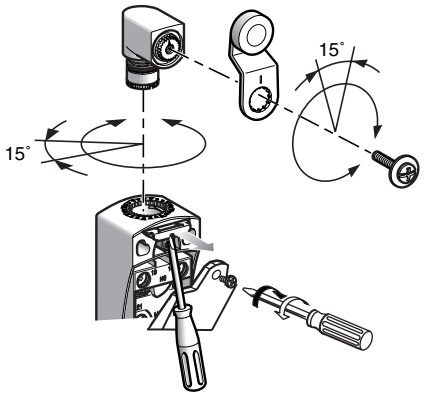
- A single metal operating head type for the Miniature design XCMD and Compact design XCKD, XCKP and XCKT ranges.



- Interchanging of heads achieved by simple operation of forked metal latch.
- Adjustable in 3 planes:

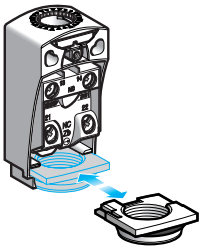


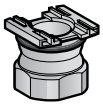
All the heads can be adjusted in 15° steps throughout 360°, in relation to the body.



All the levers can be adjusted in 15° steps throughout 360°, in relation to the horizontal axis of the head.

Principle *(continued)*





Cable entries

The cable entries for Compact design XCKD and XCKP switches enable:

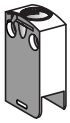
- simple cabling due to unrestricted access to contacts
- simple adaptation to the various worldwide markets

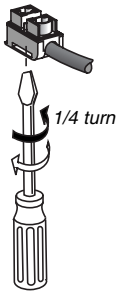
6 models are available:

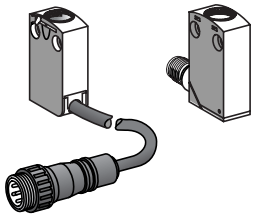
- ISO M16 x 1.5
- PG 11
- ISO M20 x 1.5
- PG 13
- 1/2" NPT
- PF 1/2 (G 1/2)

Each model is available in metal or plastic, suited for compact design XCKD or XCKP, respectively. A connector version is also available.

Connection components

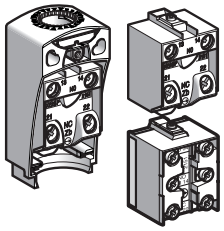


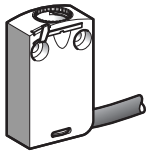




- The miniature XCMD range allows interchangeability of these pre-cabled connection components:
  - — 1/4 turn is all that is required to remove the connection component on XCMD bodies with 2 and 3 contacts,
  - — 6 alternative cable lengths are available.
- The miniature XCMD range also includes an integral or remote connector solution.

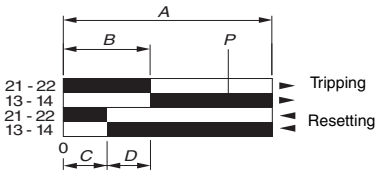
Contact block or body with contacts

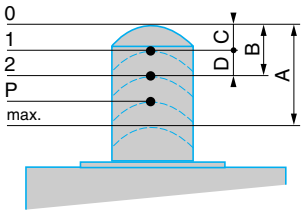


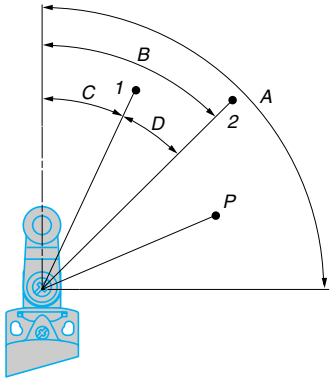


- 2 and 3 snap action and slow break contact blocks, with positive opening operation, are interchangeable between the Compact design XCKD and XCKP and Classic XCKJ, XCKS, XCKM and XCKL ranges.
- For the Miniature design XCMD range, the contacts are an integral part of the body:
  - — 2 and 3 snap action and slow break contacts, with positive opening operation, and interchangeable connection component,
  - — 4 snap action contacts, with positive opening operation, with monolithic body and connection components.

Contact blocks (continued)







Functional diagrams of snap action contacts

Example: N/C + N/O

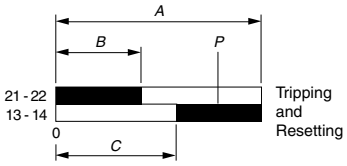
A—Maximum travel of the operator in mm or degrees.
B—Tripping travel of contact.
C—Resetting travel of contact.
D—Differential travel = B–C.
P—Point from which positive opening is assured.

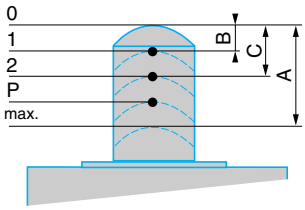
Linear movement (plunger)

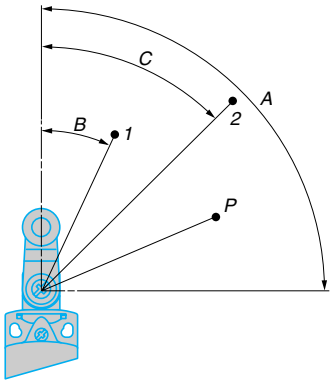
1—Resetting point of contact.
2—Tripping point of contact.
A—Maximum travel of the operator in mm.
B—Tripping travel of contact.
C—Resetting travel of contact.
D—Differential travel = B–C.
P—Point from which positive opening is assured.

Rotary movement (lever)

1—Resetting point of contact.
2—Tripping point of contact.
A—Maximum travel of the operator in degrees.
B—Tripping travel of contact.
C—Resetting travel of contact.
D—Differential travel = B–C.
P—Point from which positive opening is assured.







Functional diagrams of slow break contacts

Example: N/C + N/O break before make

A—Maximum travel of the operator in mm or degrees.
B—Tripping and resetting travel of contact 21-22.
C—Tripping and resetting travel of contact 13-14.
P—Point from which positive opening is assured.

Linear movement (plunger)

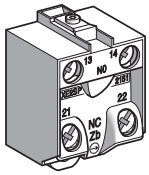
1—Tripping and resetting points of contact 21-22.
2—Tripping and resetting points of contact 13-14.
A—Maximum travel of the operator in mm.
B—Tripping and resetting travel of contact 21-22.
C—Tripping and resetting travel of contact 13-14.
P—Positive opening point.

Rotary movement (lever)

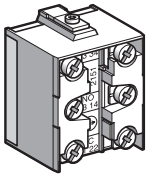
1—Tripping and resetting points of contact 21-22.
2—Tripping and resetting points of contact 13-14.
A—Maximum travel of the operator in degrees.
B—Tripping and resetting travel of contact 21-22.
C—Tripping and resetting travel of contact 13-14.
P—Positive opening point.

Contact blocks (continued)

XE2•P screw clamp terminal connections



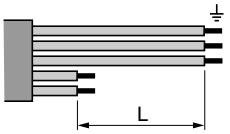
XE3•P screw clamp terminal connections

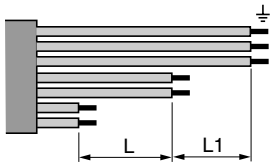


Mounting

Contact connections

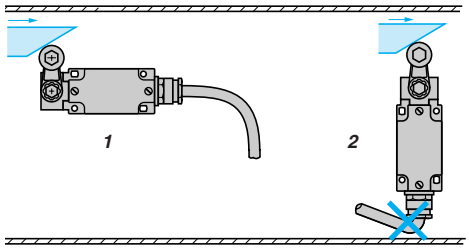
- Tightening torque:
  - — minimum tightening torque ensuring the nominal characteristics of the contact: 0.8 N•m (7.08 lb-in)
  - — maximum tightening torque without damage to the terminals: 1.2 N•m (10.62 lb-in) for **XE2•P**, 1 N•m (8.85 lb-in) for **XE3•P**
- Connecting cable: cable preparation lengths:
  - — for **XE2• P**, L = 22 mm (0.87 in.)
  - — for **XE2•P3•••**, L = 45 mm (1.77 in.)
  - — for **XE3•P**:
    L = 14 mm (0.55 in.)
    L1 = 11 mm (0.43 in.)





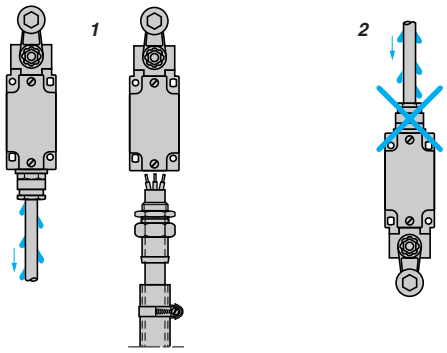
Sweep of connecting cable

1. Recommended
2. To be avoided



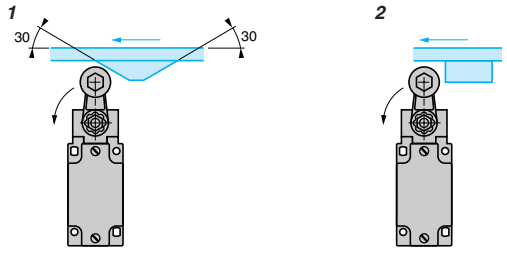
Position of cable entry

1. Recommended
2. To be avoided



Type of cam

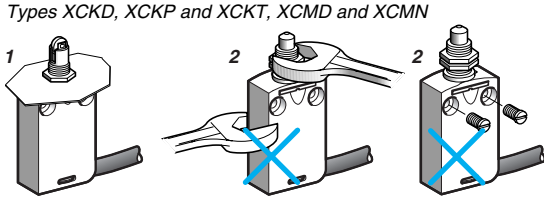
1. Recommended
2. To be avoided



Mounting limit switches by the head

1. Recommended
2. Forbidden

Types XCKD, XCKP and XCKT, XCMD and XCMN



Setup

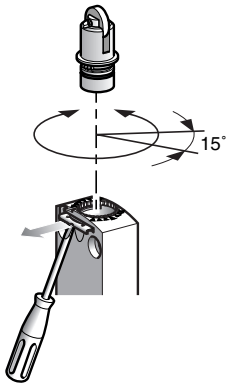
Tightening torque

- The minimum torque is that required to ensure correct operation of the switch.
- The maximum torque is the value which, if exceeded, will damage the switch.

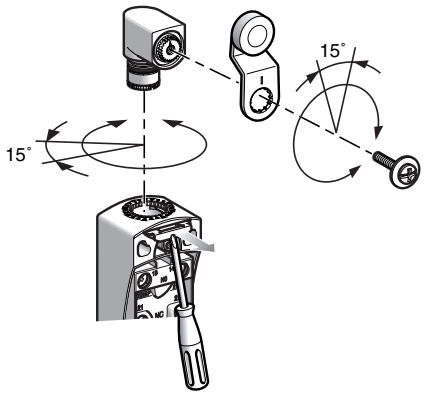
Range	Item	Torque, N•m (lb-in)	
		Min.	Max.
Compact design XCKD, XCKP, XCKT	Cover	0.8 (7.08)	1.2 (10.62)
	Mounting screw for lever on rotary head	1 (8.85)	1.5 (13.28)
Miniature design XCMD, XCMN	—	—	—
	Mounting screw for lever on rotary head	1 (8.85)	1.5 (13.28)
Classic design XCKJ	Cover	1 (8.85)	1.5 (13.28)
	Mounting nut for lever on rotary head	1 (8.85)	1.5 (13.28)
Classic design XCKS	Cover	0.8 (7.08)	1.2 (10.62)
	Mounting nut for lever on rotary head	1 (8.85)	1.5 (13.28)
Classic design XCKM, XCKML, XCKL	Cover	0.8 (7.08)	1.2 (10.62)
	Mounting nut for lever on rotary head	1 (8.85)	1.5 (13.28)

Types XCKD, XCKP, XCKT, XCMD

- Adjustable in 3 planes:



All the heads can be adjusted in 15° steps throughout 360°, in relation to the body.

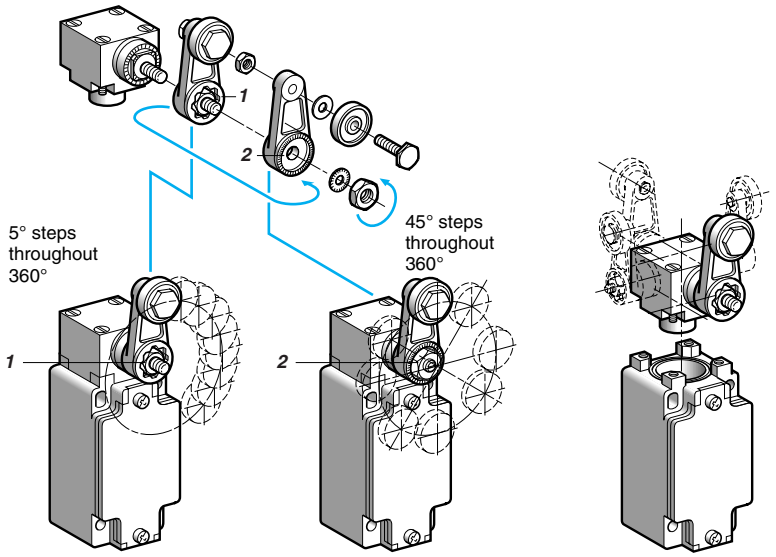


All the levers can be adjusted in 15° steps throughout 360°, in relation to the horizontal axis of the head.

Type XCKJ

- Adjustable through 360° in 5° steps, or in 45° steps by reversing the lever or its mounting.

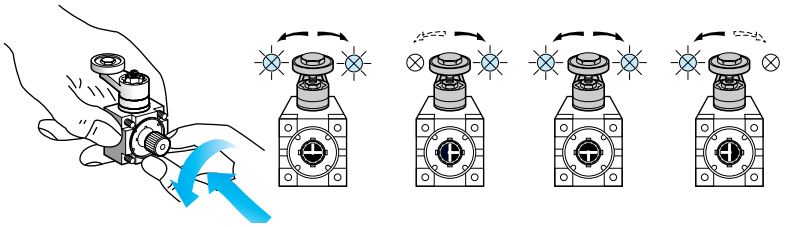
1. *Reversed α = 5°*
2. *Forward α = 45°*



Setup (continued)

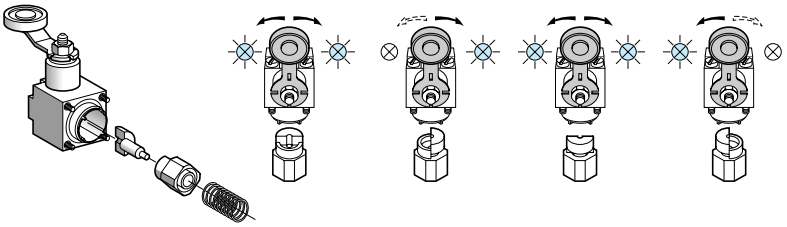
Direction of actuation programming

- XCKJ



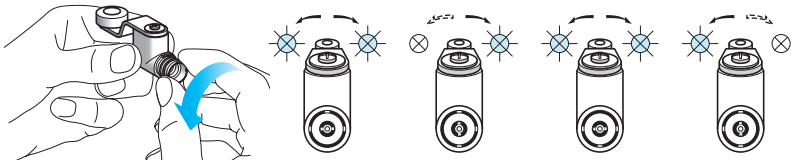
Head ZCKE05

- XCKS



Head ZCKD05

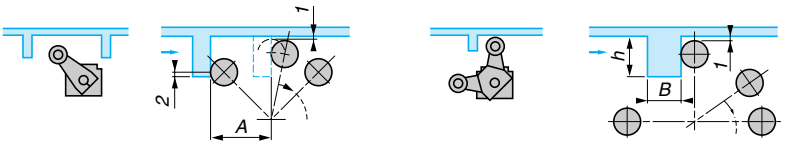
- XCKD, XCKP, XCKT and XCMD



Head ZCE05

Specific cams for heads ZCKE09 and ZC2J09

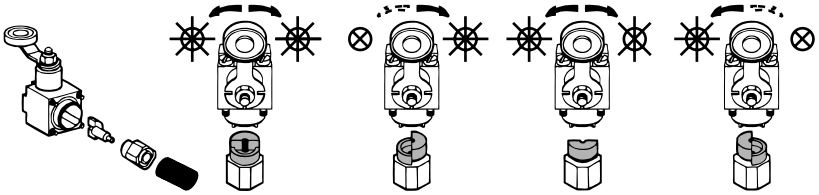
1. *0.5 mm (0.02 in.) min.*
2. *2 mm (0.08 in.) min.*



***A** = length of lever + 11 mm (0.43 in.)*
***ZCKE09**: h = 13–18 mm (0.51–0.71 in.) and B = 12 mm (0.47 in.)max.*
***ZCKJE09**: h = 14–24 mm (0.55–0.94 in.) and B = 6 mm (0.24 in.) max.*

ZCKG00 Head Programming

The ZCKG00 head is field convertible to CW, CCW or CW/CCW.
The diagram below shows the conversion process.



Compliance with standards

The majority of Telemecanique® brand products comply to national standards (such as French NF C standards, German DIN standards), European standards (such as CENELEC), or international standards (such as IEC). These standards rigidly stipulate the characteristic requirements of the designated products (for example IEC 60947 relating to low voltage switchgear and controlgear).
These products, when correctly used, enable the production of control equipment assemblies, machine control equipment or installations conforming to their own specific standards (for example IEC 60204 for the electrical equipment of industrial machines).

IEC 60947-5-1

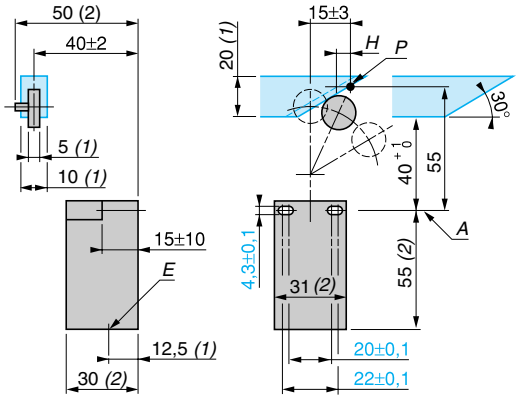
Insulation coordination (and dielectric strength)	• The standard IEC 60664 defines 4 categories of prospective transient overvoltages. It is important for the user to select control circuit components which are able to withstand these overvoltages. To these ends, the manufacturer states the rated impulse withstand voltage (U imp) applicable to the product.	
Terminal connections	• The cabling capacity, mechanical robustness and durability of the terminals, as well as the ability to resist loosening, are verified by standardized tests. • Terminal reference marking conforms to standard EN 50013.	
Switching capacity	• With maximum electrical load. A single designation (A300 for example) enables indication of the contact block characteristics related to its utilization category.	
Positive opening operation (IEC 60947-5-1 Appendix K)	• For contacts used in safety applications (end of travel, emergency stop device, etc.) the assurance of positive opening is required (see IEC 60204, EN 60204) after each test, the opening of the contact being verified by testing with an impulse voltage (2500 V).	
Electrical symbols for contacts	 • Form Za, the 2 contacts are the same polarity.	 • Form Zb, the 2 contacts are electrically separate.
Symbol for positive opening	 • Simplified version	 • Complete symbol

CENELEC EN 50047

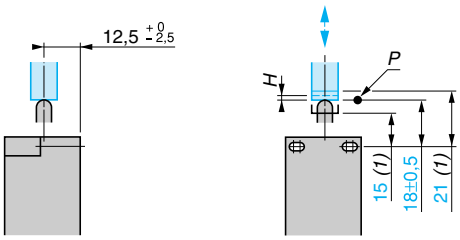
The European standards organization CENELEC, which has 14 member countries, has defined in this standard the first type of limit switch.

This standard defines 4 variants of devices (forms A, B, C, E).
Limit switches XCKP, XCKD and XCKT conform to standard EN 50047.

Form A, with roller lever



Form B, with end plunger (rounded)

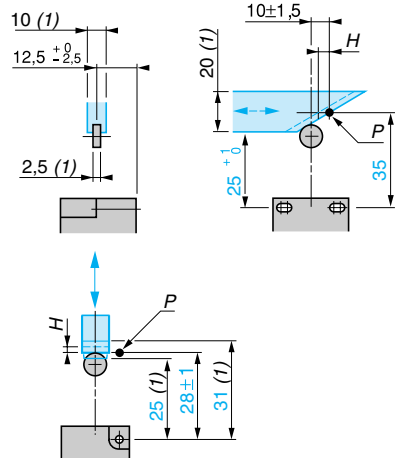


1. Minimum value
2. Maximum value

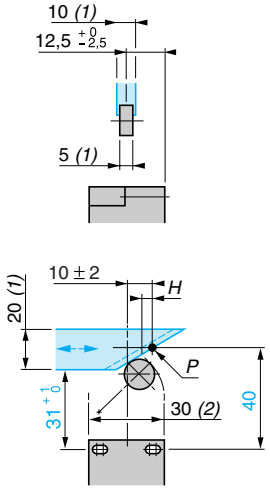
A: reference axis
H: differential travel

P: tripping point
E: cable entry

Form C, with end roller plunger



Form E, with roller lever for 1 direction of actuation



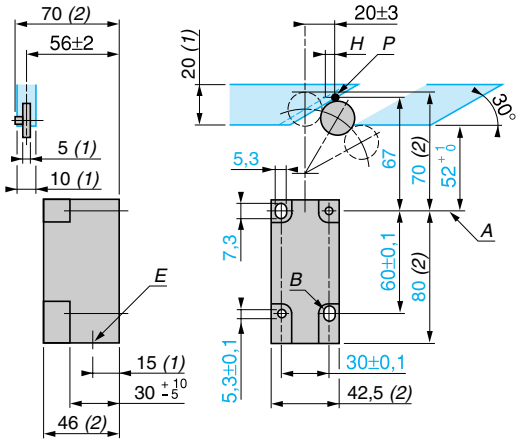
Compliance with standards *(continued)*

CENELEC EN 50041

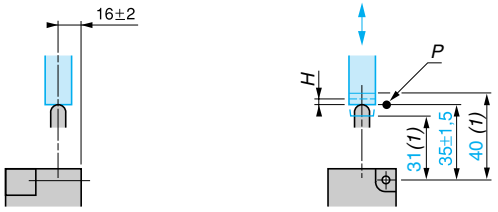
The European standards organization CENELEC, which has 14 member countries, has defined in this standard the second type of limit switch.

It defines 6 variants of devices (forms A, B, C, D, F, G).
Limit switches XCKJ and XCKS conform to standard EN 50041.

Form A, with roller lever



Form B, with end plunger (rounded)

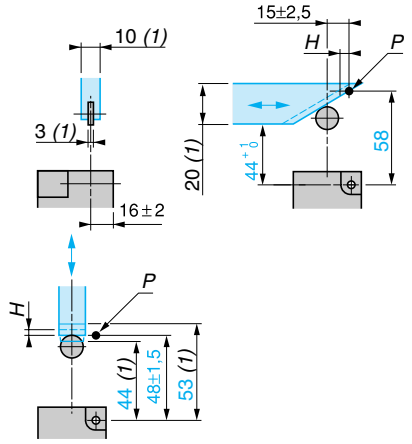


1. Minimum value
2. Maximum value

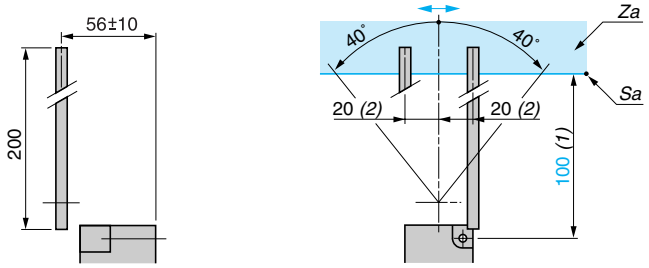
A: reference axis
B: optional elongated holes
H: differential travel
P: tripping point

E: cable entry
Za: tripping zone
Sa: tripping threshold

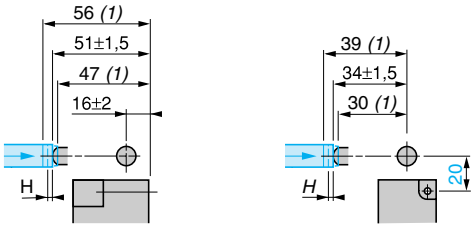
Form C, with end roller plunger



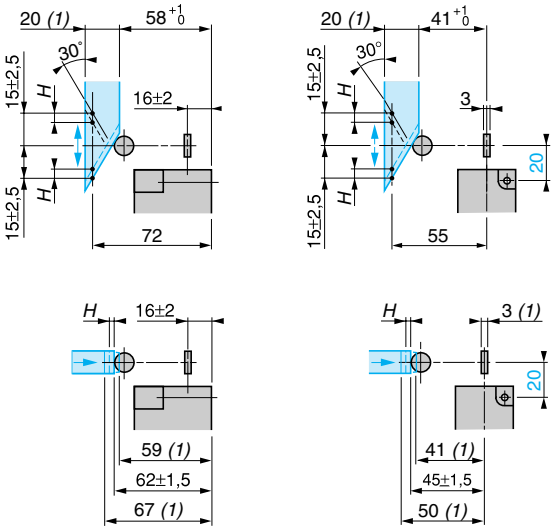
Form D, with rod lever



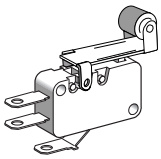
Form F, with side plunger (rounded)

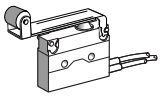


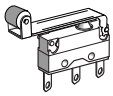
Form G, with side roller plunger

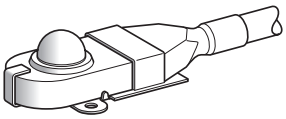


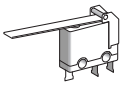
Introduction


XEP3


XEP4E1W●


XEP4E1FD●


XC0


XEP5

Electromechanical detection

Osiswitch miniature snap switches, featuring electromechanical technology, assure the following functions:

- detection of presence or absence
- detection of position.

Actuation of the operator (plunger or lever) on the miniature snap switch causes the electrical contact to change state. This information can then be processed by a PLC controlling the installation.
Osiswitch miniature snap switches can be used both for industrial applications and the building sector.

Features

Osiswitch miniature snap switches incorporate a C/O snap-action, single-break contact. They are characterized by:

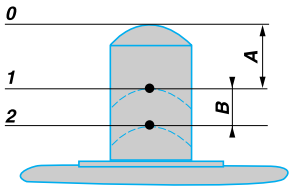
- high electrical ratings for their very small size
- short tripping travel
- low tripping force
- high repeat accuracy on the tripping points
- long service life

Terminology

Forces

Maximum tripping force: maximum force which must be applied to the operator to move it from the rest (unactuated) position to the trip position (tripping point).
Minimum release force: value to which the force on the operator must be reduced to allow the snap action mechanism to return to its rest (unactuated) position.
Maximum permissible end of travel force: maximum force that can be applied to the operator at the end of its travel without damaging the switch.

Position / Travel



1. Tripping point: position of the operator in relation to the switch mountings (mounting hole center line) at the instant the switch contact changes state.

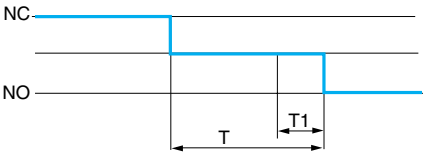
A. Differential travel: distance between the tripping point and the position at which the snap action mechanism returns to its initial state on release of the operator.

2. Overtravel limit: position of the operator when an extreme force has moved it to the effective end of its available travel.

B. Overtravel: distance between the tripping point and the overtravel limit.

The reference point for the figures given for forces and travel is a point F, which is situated on the plunger in the case of a basic switch or at 3 mm (0.12 in.) from the end of the plain lever in the case of a lever operated switch.

Mechanical characteristics



T1: bounce time
T: changeover time

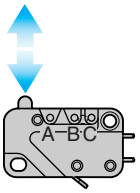
Changeover time

This is the time taken by the moving contact when moving from one fixed contact to another until it becomes fully stable (contact bounce included).
This time is related to the inter-contact distance, the mechanical characteristics of the snap action mechanism, and the mass of the moving element. However, due to the snap action mechanisms used, the time is largely independent of the speed of operation. It is normally less than 20 ms (including bounce times of less than 5 ms).

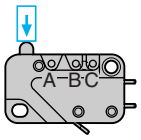
Operating speed and maximum usable operating rate

Our miniature snap switches are suitable for a wide range of operating speeds: generally, from 1 mm/mn to 1 m/s (0.04 in/mn to 3.28 ft/s). The maximum usable operating rate on a light electrical load may be as high as 10 operations/second.

Mounting



Operating speed and rate



Mounting and operation

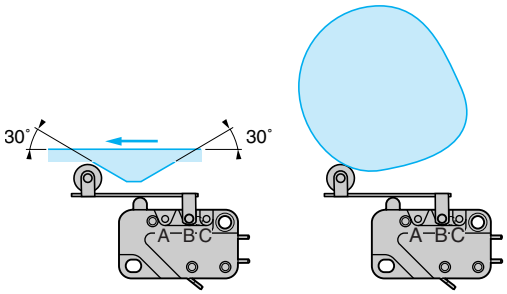
To conform to the leakage paths and air gaps in standards EEC 24 - EN/IEC 61058 and EN/IEC 60947:

- an insulation pad must be inserted between the snap switch and the mounting surface if the latter is metal,
- manual operation of a metal actuator must only be carried out with the aid of an intermediate actuator made of an insulating material.
- The installer must ensure adequate protection against direct contact with the output terminals.

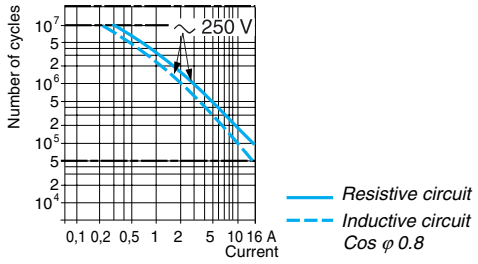
Actuation method

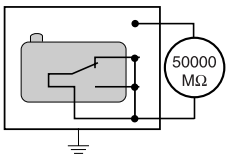
Direct operation: The plunger should preferably be actuated along its axis. However, the majority of our miniature snap switches will accept skewed operation provided the angle of actuation is not more than 45°.
The travel of the actuator must not be limited to only reaching the tripping point. The actuator must always be operated in such a manner that the plunger reaches a point at least 0.5 times the stated overtravel value of the switch. Also, it should not reach its end of travel nor exceed the maximum permissible end-of-travel force.

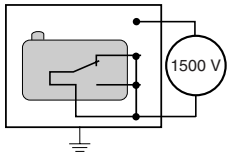
Mounting (continued)

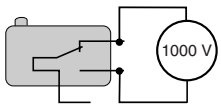


Electrical characteristics









Actuation method (continued)

Lever operators:

- when actuation is by a roller lever, force should preferably be applied in the direction shown in the diagrams opposite,
- where the movements involved are fast, the ramp should be so designed as to ensure that the operator is not subjected to any violent impact or abrupt release.

Mounting—Tightening torque

The tightening torque of the fixing screws must conform to the following values:

Ø of mounting screw		2	2.5	3	3.5	4
Tightening torque, N•cm (lb-in)	Maximum	25 (2.21)	35 (3.10)	60 (5.31)	100 (8.85)	150 (13.28)
	Minimum	15 (1.33)	25 (2.21)	40 (3.54)	60 (5.31)	100 (8.85)

Resistance to mechanical shock and vibration

- Resistance to shock and vibration depends on the mass of the moving parts and on the forces holding the contacts together.
- In general, for a miniature snap switch without accessory:
  - — vibration > 10 gn, 10 to 500 Hz
  - — shock > 50 gn 11 ms 1/2 sine wave

Operating curves

These indicate the electrical life of the miniature snap switches under standard conditions [20°C (68 °F), 1 cycle/2 seconds], by showing the number of switching operations which can be performed with given types of load. For sealed snap switches, the operating rate is 1 cycle/6 s.

Insulation resistance

The insulation resistance of the miniature snap switches is generally greater than 50,000 MΩ, measured at 500 Vdc

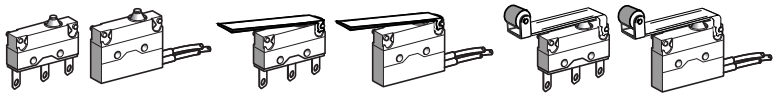
Dielectric strength

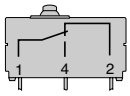
The dielectric strength of our miniature snap switches is generally superior to:

- 1500 V between live parts and earth
- 1000 V between contacts
- 600 V between contacts for switches with an inter-contact distance less than 0.3 mm

Limit Switches
Osiswitch® Miniature Snap Switches
Subminiature (DIN 41635 B format, sealed) and Sub-subminiature (DIN 41635 D format)

Catalog numbers
Subminiature design, DIN 41635 B format, sealed



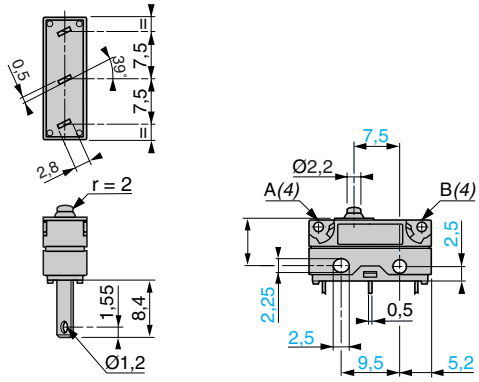
Type of operator		Plunger	Flat lever *(1)*	Roller lever *(1)*
 **Single-pole C/O snap action** Wiring: 1 Black 2 Grey 4 Blue	**2.8 mm (0.11 in.) cable clip tag connections**	**XEP4E1W7** *(3)*	**XEP4E1W7A326** *(3)*	**XEP4E1W7A454** *(3)*
	Weight, g (oz)	2.4 (0.08)	3.1 (0.11)	3.2 (0.11)
	Pre-cabled connections	**XEP4E1FD** *(3)*	**XEP4E1FDA326** *(3)*	**XEP4E1FDA454** *(3)*
	Weight, g (oz)	14.1 (0.50)	14.8 (0.52)	14.9 (0.53)
Separate components	**Flat lever** *(2)*	**ZEP4L326** *(3)*	—	—
	Weight, g (oz)	0.7 (0.02)	—	—
	Roller lever *(2)*	**ZEP4L454** *(3)*	—	—
	Weight, g (oz)	0.8 (0.03)	—	—

Sub-subminiature design, DIN 41635D format

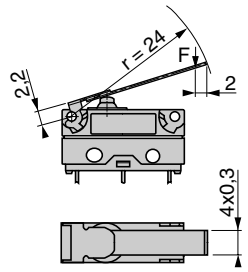
Type of operator		Plunger	Flat lever *(1)*
 **Single-pole C/O snap action**	**Solder tag connections**	**XEP5P1W2** *(3)*	**XEP5P1W2Z55B** *(3)*
	Weight, g (oz)	1.4 (0.05)	1.9 (0.07)

Dimensions

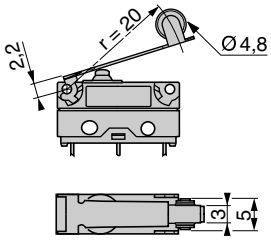
XEP4E1W7



XEP4E1W7A326



XEP4E1W7A454



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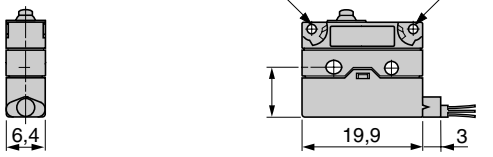

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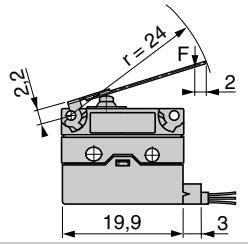

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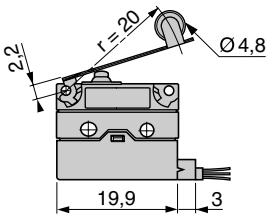
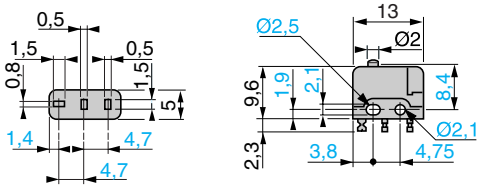
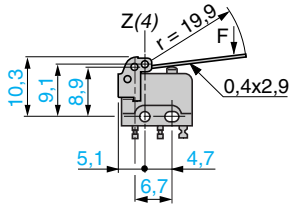


XEP5P1W2



XEP5P1W2Z55B

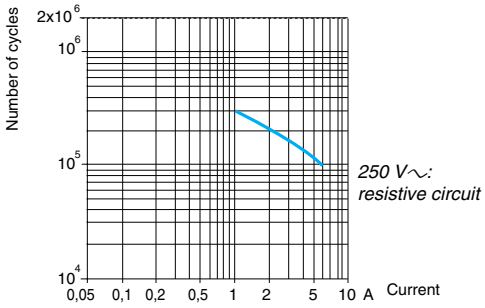


1. To avoid damage to the mounting spigots, removal of the lever from complete products is not recommended.
2. Levers only for mounting on basic (plunger) snap switches (XEP4E1W7 and XEP4E1FD).
3. Switches sold in lots of 5.
4. A, B, Z: lever fixing positions.

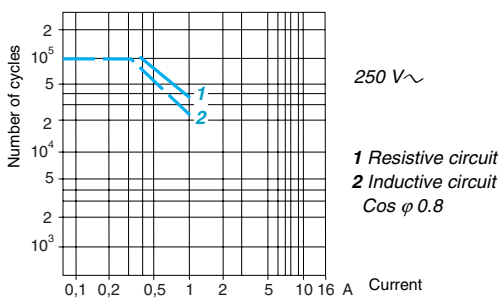
Switch type			XEP4E1••, XEP5P1W2 Plunger	XEP4E1••A326, XEP5P1W2Z55B Flat lever	XEP4E1••A454 Roller lever
Environmental characteristics					
Lever fixing position *(1)*			—	A	A
Switch actuation			On end	Horizontal	
Product certifications			CE, IEC 60947-5-1, EN 60947-5-1, c UR us, UL 1054, EN 61058		
Degree of protection			IP 67 **XEP4E1FD••**, case IP 67 and tags IP 00 **XEP4E1W7••**, case IP 40 and tags IP 00 **XEP5P1W2••**		
Operating temperature			- 40...+ 105 °C **XEP4E1FD••**, -40...+125 °C **XEP4E1W••••** and **XEP5P1•••**		
Materials	Enclosure		Polyester **XEP4**, diallyl-phtalate **XEP5**		
	Lever		—	Stainless steel	Stainless steel, glass reinforced polyamide roller
	Contact		AgCdO **XEP4E1••,** Ag **XEP5**		
	Tags		Tinned brass **XEP4E1W•••,** gold plated brass **XEP5P1••**		
Mechanical characteristics		**Lever fixing position** *(1)*			
Maximum tripping force, N (oz)	XEP4	A	2.5 N (8.99 oz)	0.63 N (2.27 oz)	0.83 N (2.99 oz)
		B	2.5 N (8.99 oz)	1.25 N (4.50 oz)	1.67 N (6.01 oz)
	XEP5		2 N (7.19 oz)	0.80 N (2.88 oz)	—
Minimum release force, N (oz)	XEP4	A	0.80 N (2.88 oz)	0.20 N (0.72 oz)	0.27 N (0.97 oz)
		B	0.80 N (2.88 oz)	0.40 N (1.44 oz)	0.53 N (1.91 oz)
	XEP5		0.40 N (1.44 oz)	0.15 N (0.54 oz)	—
Maximum permissible end of travel force, N (lb)	XEP4	A	10 N (2.25 lb)	2.5 N (0.56 lb)	3.33 N (0.75 lb)
		B	10 N (2.25 lb)	5 N (1.12 lb)	6.67 N (1.50 lb)
	XEP5		10 N (2.25 lb)	—	—
Tripping point (TP) *(2)*	XEP4	A	8.40 +/- 0.3 mm	10.7 +/- 1.7 mm	15.5 +/- 1.4 mm
		B	8.40 +/- 0.3 mm	9.6 +/- 1.0 mm	14.5 +/- 0.9 mm
	XEP5		8.40 mm	9.20 mm	—
Maximum differential travel	XEP4	A	0.13 mm	0.52 mm	0.39 mm
		B	0.13 mm	0.26 mm	0.20 mm
	XEP5		0.06 mm	0.25 mm	—
Minimum overtravel	XEP4	A	0.60 mm	2.40 mm	1.80 mm
		B	0.60 mm	1.20 mm	0.90 mm
	XEP5		0.10 mm	—	—
Inter-contact distance	XEP4		0.4 mm		
	XEP5		0.3 mm		
Mechanical durability	XEP4		2 million operating cycles		
	XEP5		0.1 million operating cycles		
Electrical characteristics					
Operational characteristics	XEP4		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, EN 60947-5-1 Appendix A 125-250 Vac 6.0 A conforming to UL 1054 6 (1) A 250 Vac 10,000 cycles conforming to EN 61058		
	XEP5		AC-15: D300 (Ue: 240 V, Ie: 0.3 A) conforming to IEC 60947-5-1, EN 60947-5-1 Appendix A		
Thermal current	XEP4		7.5 A on 250 V (50/60 Hz)		
	XEP5		8.5 A on 250 V (50/60 Hz)		
Connection	XEP4		**XEP4E1W7•**: 2.8 mm (0.11 in.) cable clip tags **XEP4E1FD**: Pre-cabled (horizontally in-line), 3 x 0.5 mm², length 0.5 m (1.6 ft)		
	XEP5		Solder tags		

Operating curves

XEP4E1••



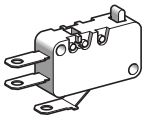
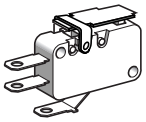
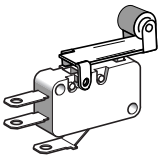
XEP5P1••

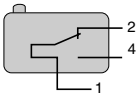


1. Miniature snap switches fitted with a lever are supplied with the lever fixed in position A (see page 26).
   For basic (plunger) snap switches, it is possible to fix a lever in position A or B, depending on the required tripping conditions (see page 26).
2. Position of the operator in relation to the switch mountings (mounting hole center line), at the instant the contact changes state.

Limit Switches
Osiswitch® Miniature Snap Switches
Miniature (DIN 41635 A format)

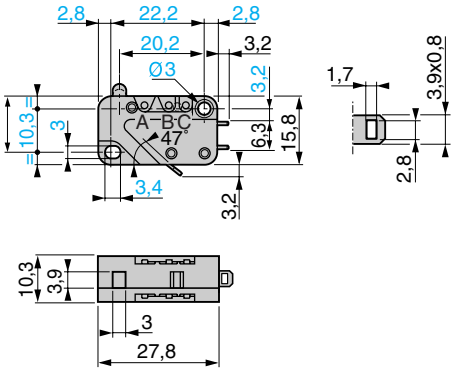
Catalog numbers

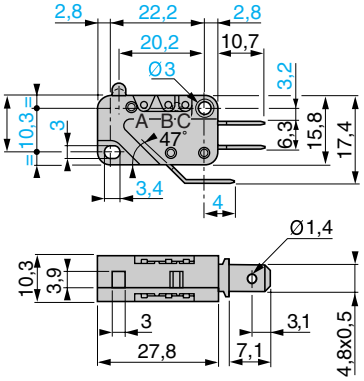
Type of operator			Plunger *(2)*	Flat lever *(1) (2)*	Roller lever *(1) (2)*
Single-pole C/O snap action 	**Standard contacts**	**Solder tags**	**XEP3S1W2**	**XEP3S1W2B524**	**XEP3S1W2B529**
		4.8 mm (0.19 in.) cable clip tags	**XEP3S1W6**	**XEP3S1W6B524**	**XEP3S1W6B529**
		6.35 mm (0.25 in.) cable clip tags	**XEP3S1W3**	**XEP3S1W3B524**	**XEP3S1W3B529**
		Weight, g (oz)	5.6 (0.20)	6.3 (0.22)	6.6 (0.23)
	Very low operating force contacts	**Solder tags**	**XEP3S2W2**	**XEP3S2W2B524**	**XEP3S2W2B529**
		4.8 mm (0.19 in.) cable clip tags	**XEP3S2W6**	**XEP3S2W6B524**	**XEP3S2W6B529**
		6.35 mm (0.25 in.) cable clip tags	**XEP3S2W3**	**XEP3S2W3B524**	**XEP3S2W3B529**
		Weight, g (oz)	5.6 (0.20)	6.3 (0.22)	6.6 (0.23)
Separate components	**Flat lever** *(3)*		**ZEP3L524**		
		Weight, g (oz)	0.7 (0.02)		
	Roller lever *(3)*		**ZEP3L529**		
		Weight, g (oz)	1 (0.04)		

Dimensions

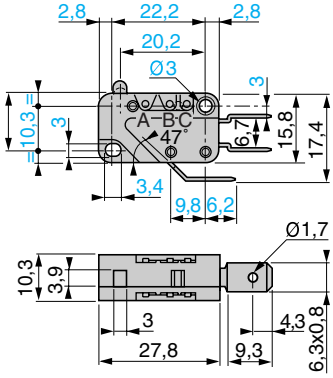
XEP3S•W2



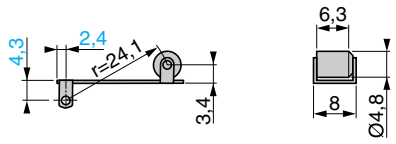
XEP3S•W6



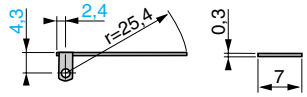
XEP3S•W3



ZEP3L529



ZEP3L524



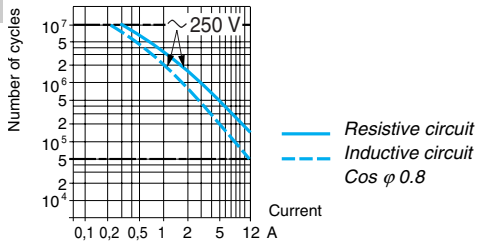
1. To avoid damage to the mounting spigots, removal of the lever from complete products is not recommended.
2. Switches sold in lots of 10.
3. Levers only for mounting on basic (plunger) snap switches (XEP3S•W2, XEP3S•W3 and XEP3S•W6), in mounting positions A, B or C.

Limit Switches
Osiswitch® Miniature Snap Switches
Miniature (DIN 41635 A format)

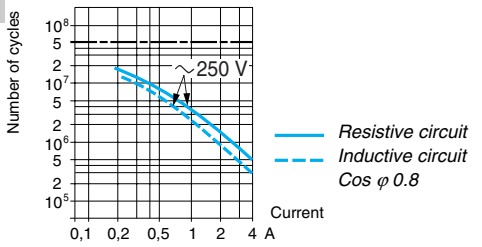
Switch type			**XEP3 S•W2**	**XEP3 S•W2B254**	**XEP3 S•W2B259**
Type of operator			Plunger	Flat lever	Roller lever
Environmental characteristics					
Lever fixing position *(1)*			—	B	B
Switch actuation			On end	Horizontal	
Product certifications			⎓ UR us, CE, IEC/EN 60947-5-1, UL 1054, EN 61058-1		
Degree of protection			Case IP 40 and tags IP 00		
Operating temperature			- 25...+ 125 °C		
Materials	Enclosure		Polyester		
	Lever		—	Stainless steel	Stainless steel, glass reinforced polyamide roller
	Contact		AgNi		
Mechanical characteristics					
	Lever fixing position *(1)*				
Maximum tripping force, N (oz)	Standard	A	0.80 N (2.88 oz)	0.20 N (0.72 oz)	
		B	0.80 N (2.88 oz)	0.40 N (1.44 oz)	
		C	0.80 N (2.88 oz)	0.53 N (1.91 oz)	
	Very low force	A	0.25 N (0.90 oz)	0.06 N (0.22 oz)	
		B	0.25 N (0.90 oz)	0.13 N (0.47 oz)	
		C	0.25 N (0.90 oz)	0.17 N (0.61 oz)	
Minimum release force, N (oz)	Standard	A	0.20 N (0.72 oz)	0.05 N (0.18 oz)	
		B	0.20 N (0.72 oz)	0.10 N (0.36 oz)	
		C	0.20 N (0.72 oz)	0.13 N (0.47 oz)	
	Very low force	A	0.05 N (0.18 oz)	0.01 N (0.04 oz)	
		B	0.05 N (0.18 oz)	0.03 N (0.11 oz)	
		C	0.05 N (0.18 oz)	0.03 N (0.11 oz)	
Maximum permissible end of travel force, N (lb)	Standard, very low force	A	20 N (4.50 lb)	5 N (1.12 lb)	
		B	20 N (4.50 lb)	10 N (2.25 lb)	
		C	20 N (4.50 lb)	13 N (2.92 lb)	
Tripping point (TP) *(2)*	Standard, very low force	A	$14.70^{+/- 0.4}$ mm	$15.20^{+/- 2.5}$ mm	$20.5^{+/- 2.9}$ mm
		B	$14.70^{+/- 0.4}$ mm	$15.20^{+/- 1.0}$ mm	$20.5^{+/- 1.5}$ mm
		C	$14.70^{+/- 0.4}$ mm	$15.20^{+/- 0.8}$ mm	$20.5^{+/- 1.2}$ mm
Maximum differential travel	Standard, very low force	A	0.35 mm	1.40 mm	
		B	0.35 mm	0.70 mm	
		C	0.35 mm	0.53 mm	
Minimum overtravel	Standard	A	1.20 mm	4.80 mm	
		B	1.20 mm	2.40 mm	
		C	1.20 mm	1.80 mm	
	Very low force	A	1.10 mm	4.40 mm	
		B	1.10 mm	2.20 mm	
		C	1.10 mm	1.65 mm	
Inter-contact distance			0.40 mm		
Mechanical durability for 2/3 overtravel	Standard		20 million operating cycles		
	Very low force		50 million operating cycles		
Electrical characteristics					
Operational characteristics	Standard		AC-15: B300 (Ue: 240 V, Ie: 1.5 A) DC-13: R300 (Ue: 250 V, Ie: 0.1 A) conforming to IEC/EN 60947-5-1 Appendix A 125-250 Vac 10.1 A—1/2 HP conforming to UL 1054 12 (3) A 250 Vac 10,000 cycles conforming to EN 61058-1		
	Very low force		AC-15: D300 (Ue: 240 V, Ie: 0.3 A) conforming to IEC/EN 60947-5-1 Appendix A 125-250 Vac 4 A—1/10 HP conforming to UL 1054 4 (1) A 250 Vac 50,000 cycles conforming to EN 61058-1		
Thermal current	Standard		15 A on 250 V (50/60 Hz)		
	Very low force		5 A on 250 V (50/60 Hz)		
Connection			**XEP3 S•W2:** solder tags, **XEP3 S•W6:** 4.8 mm (0.19 in.) cable clip tags **XEP3 S•W3:** 6.35 mm (0.25 in.) cable clip tags.		

Operating curves

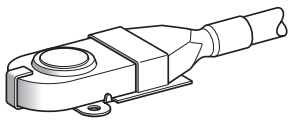
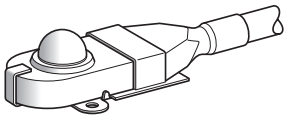
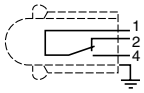
XEP3S1••



XEP3S2••

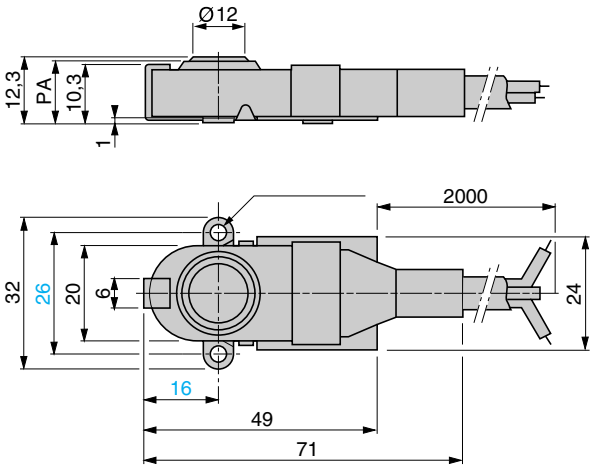


1. Miniature snap switches fitted with a lever are supplied with the lever fixed in position B (see page 28). For basic (plunger) snap switches, it is possible to fix a lever in position A, B or C, depending on the required tripping conditions (see page 28).
2. Position of the operator in relation to the switch mountings (mounting hole center line), at the instant the contact changes state.

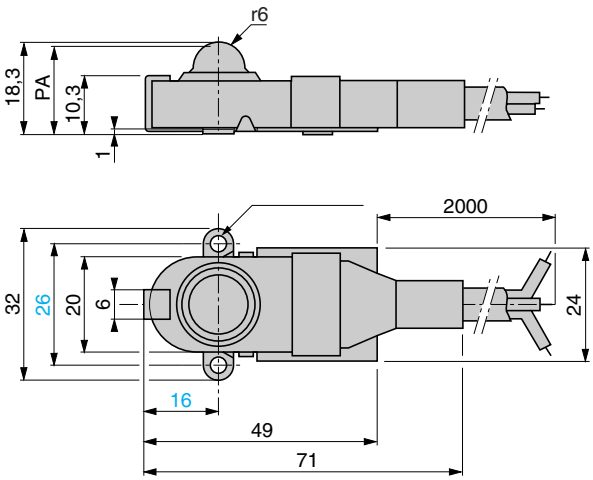
Type of head	Plunger (mounting by the body)	
		
Type of operator	Head with flat plunger	Head with domed encased plunger
Catalog numbers		
 **Single-pole C/O snap action** Wiring: 1 Black 2 Brown 4 Blue	**XC010L2**	**XC011L2**
Weight, kg (lb)	0.145 (0.320)	0.150 (0.331)

Dimensions

XC010L2



XC011L2

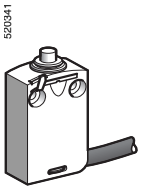


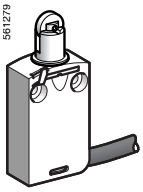
Switch type		XC010•	XC011•
Environmental characteristics			
Switch actuation		On end, flat plunger *(1)*	On end, domed plunger *(1)*
Product certifications		CE, IEC 60947-5-1	
Degree of protection		IP 66	
Operating temperature		0...85 °C (32…185 °F)	
Materials	Internal housing	Metal	
	Casing	Nitrile	
	Mounting support	Steel, zinc passivated	
	Contact	Ag	
Mechanical characteristics			
Maximum tripping force		5.3 N (1.19 lb)	
Minimum release force		1.5 N (0.34 lb)	
Maximum permissible end of travel force		30 N (6.74 lb)	
Tripping point (TP) *(2)*		$11.4^{\pm 0.4}$ mm	$17.4^{\pm 0.5}$ mm
Maximum differential travel		0.2 mm	
Minimum overtravel		0.2 mm	
Inter-contact distance		0.5 mm	
Mechanical durability		2 million operating cycles	
Electrical characteristics			
Operational current		1 A on 24 V (50/60 Hz)	
Thermal current/insulation voltage		12 A/60 V	
Connection		A05 VVF cable, 3 x 0.75 mm^2, length 2 m (6.6 ft), overall diameter ≤ 7.6 mm (0.30 in.)	
Electrical durability		AC-15: 0.5 million operating cycles	
Operating curve			

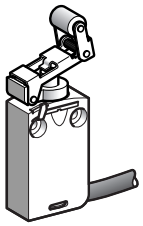
1. Manual actuation must be made by an intermediate insulated part, in order to meet basic safety requirements. One of the two mounting holes must also be used as an earth protection terminal.
2. Distance between the base of the switch and the top of the plunger at the instant the contact changes state (see dimensions, page 30).

■ XCM D
pre-cabled

□ With head for linear movement (plunger). Mounting by the body.

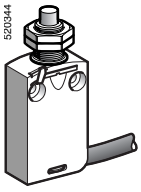


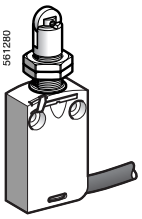




Page 34

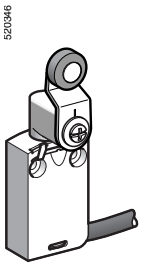
□ With head for linear movement (plunger). Mounting by the head.

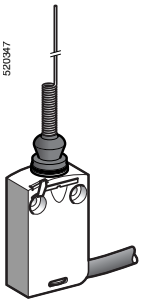




Page 34

□ With head for rotary movement (lever) or multi-directional. Mounting by the body.



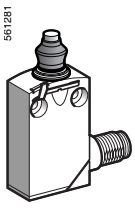


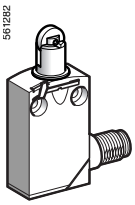
Page 35

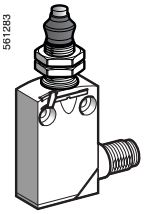
■ XCM D
with integral connector

□ With head for linear movement (plunger)

Mounting by the body **Mounting by the head**

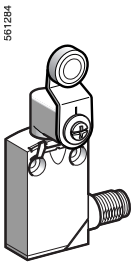


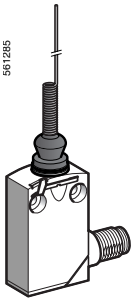




Page 38

□ With head for rotary movement (lever) or multi-directional. Mounting by the body.





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Environmental 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

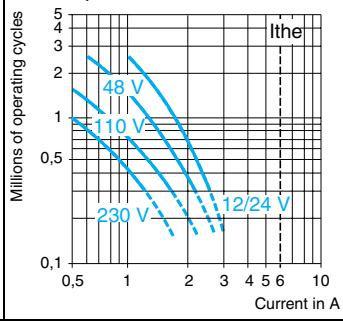
Protection against prolonged immersion: the test conditions are subject to agreement between the manufacturer and the user.

Contact block characteristics

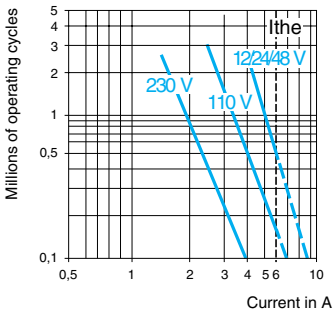
Rated operational characteristics	Switches with 2 contacts	~ AC-15; B300 (Ue = 240 V, Ie = 1.5 A) ⎓ DC-13; R300 (Ue = 250 V, Ie = 0.1 A), conforming to IEC 60947-5-1 Appendix A, EN 60947-5-1
	Switches with 3 and 4 contacts	~ AC-15; C300 (Ue = 240 V, Ie = 0.75 A) ⎓ DC-13; R300 (Ue = 250 V, Ie = 0.1 A), 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		• Conforming to IEC 60947-5-1 Appendix C • Utilization categories AC-15 and DC-13 • Maximum operating rate: 3600 operating cycles/hour • Load factor: 0.5

a.c. supply
~ 50/60 Hz
⌒ inductive circuit

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)



XCMD slow break (N/C + N/O, N/C + N/C + N/O contacts)



d.c. supply ⎓

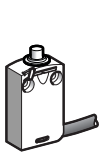
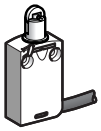
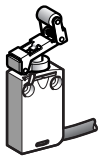
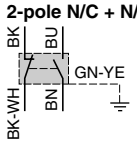
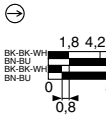
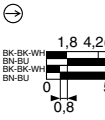
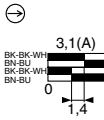
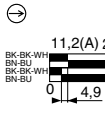
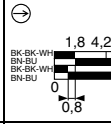
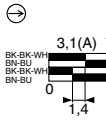
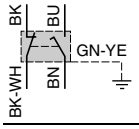
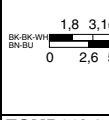
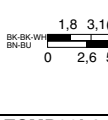
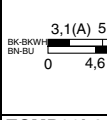
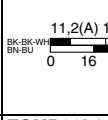
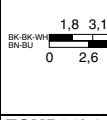
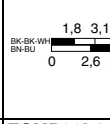
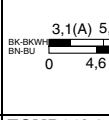
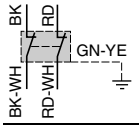
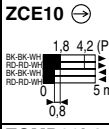
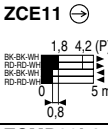
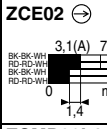
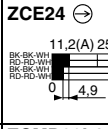
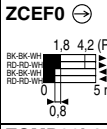
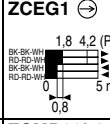
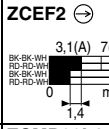
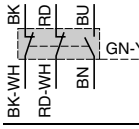
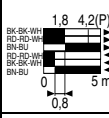
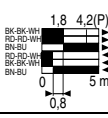
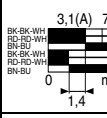
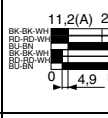
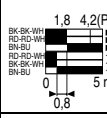
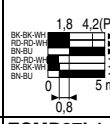
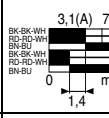
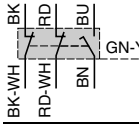
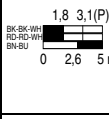
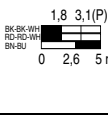
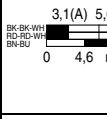
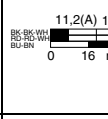
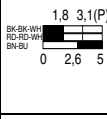
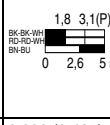
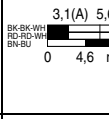
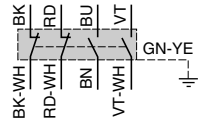
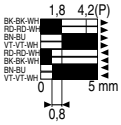
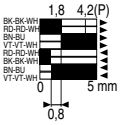
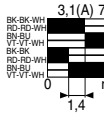
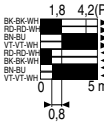
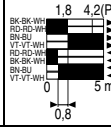
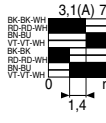
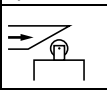
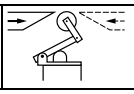
Power switched in W for 5 million operating cycles

Voltage	V	24	48	120
⌒	W	3	2	1

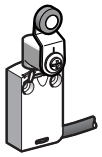
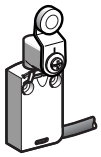
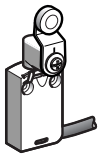
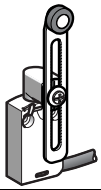
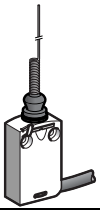
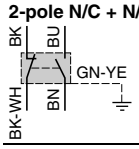
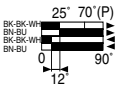
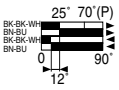
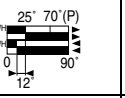
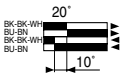
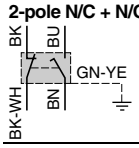
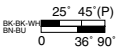
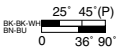
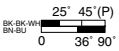
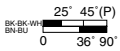
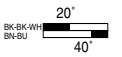
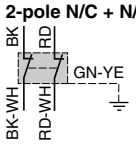
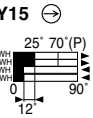
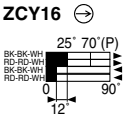
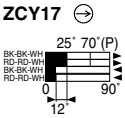
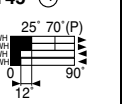
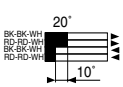
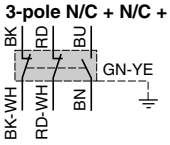
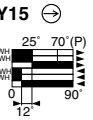
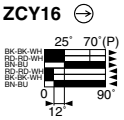
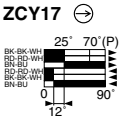
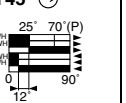
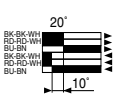
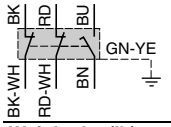
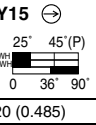
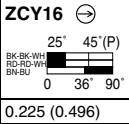
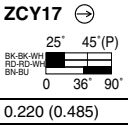
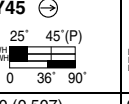
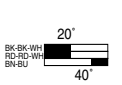
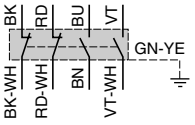
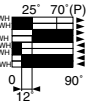
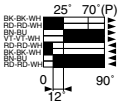
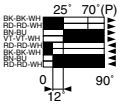
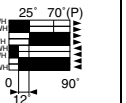
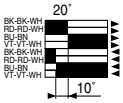
Power switched in W for 5 million operating cycles

Voltage	V	24	48	120
⌒	W	4	3	3

Limit Switches
Osiswitch® Miniature, Metal
Universal, XCMD, Pre-Cabled

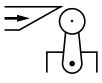
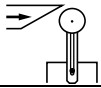
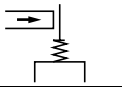
Type of head	Plunger (mounting by the body)				Plunger (mounting by the head)		
							
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Retractable steel roller lever plunger	M12 with metal end plunger	M16 with metal end plunger with elastomer boot	M12 with steel roller plunger
Catalog numbers							
2-pole N/C + N/O snap action 	**XCMD2110L1** 	**XCMD2111L1** 	**XCMD2102L1** 	**XCMD2124L1** 	**XCMD21F0L1** 	**XCMD21G1L1** 	**XCMD21F2L1** 
2-pole N/C + N/O break before make, slow break 	**XCMD2510L1** 	**XCMD2511L1** 	**XCMD2502L1** 	**XCMD2524L1** 	**XCMD25F0L1** 	**XCMD25G1L1** 	**XCMD25F2L1** 
2-pole N/C + N/C snap action 	**ZCMD29L1 + ZCE10** 	**ZCMD29L1 + ZCE11** 	**ZCMD29L1 + ZCE02** 	**ZCMD29L1 + ZCE24** 	**ZCMD29L1 + ZCEF0** 	**ZCMD29L1 + ZCEG1** 	**ZCMD29L1 + ZCEF2** 
3-pole N/C + N/C + N/O snap action 	**ZCMD39L1 + ZCE10** 	**ZCMD39L1 + ZCE11** 	**ZCMD39L1 + ZCE02** 	**ZCMD39L1 + ZCE24** 	**ZCMD39L1 + ZCEF0** 	**ZCMD39L1 + ZCEG1** 	**ZCMD39L1 + ZCEF2** 
3-pole N/C + N/C + N/O break before make, slow break 	**ZCMD37L1 + ZCE10** 	**ZCMD37L1 + ZCE11** 	**ZCMD37L1 + ZCE02** 	**ZCMD37L1 + ZCE24** 	**ZCMD37L1 + ZCEF0** 	**ZCMD37L1 + ZCEG1** 	**ZCMD37L1 + ZCEF2** 
Weight, kg (lb)	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)
4-pole N/C + N/C + N/O + N/O snap action 	**ZCMD41L1 + ZCE10** 	**ZCMD41L1 + ZCE11** 	**ZCMD41L1 + ZCE02** 	**ZCMD41L1 + ZCE24** 	**ZCMD41L1 + ZCEF0** 	**ZCMD41L1 + ZCEG1** 	**ZCMD41L1 + ZCEF2** 
Weight, kg (lb)	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	■ contact closed □ contact open		(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator		
Characteristics							
Switch actuation	On end		By 30° cam		On end		By 30° cam
Type of actuation							
Maximum actuation speed	0.5 m/s (1.64 ft/s)						0.1 m/s (0.33 ft/s)
Minimum force or torque — For tripping	8.5 N (1.91 lb)		7 N (1.57 lb)	2.5 N (0.56 lb)	8.5 N (1.91 lb)		7 N (1.57 lb)
Minimum force or torque — For positive opening	42.5 N (9.55 lb)		35 N (7.87 lb)	12.5 N (2.81 lb)	42.5 N (9.55 lb)		35 N (7.87 lb)
Cabling	PvR cable, 1 m (3.3 ft) long: 5 x 0.75 mm^2 for 2-pole contact versions; 7 x 0.5 mm^2 for 3-pole contact versions; 9 x 0.34 mm^2 for 4-pole contact versions. For other cable lengths, see page 44.						

NOTE: For more information, consult pages 40–42.

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)*
Catalog numbers					
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)	0.225 (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 □ contact open	(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

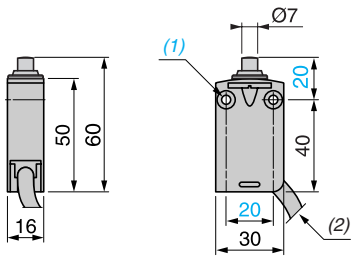
1. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mountings.

Characteristics

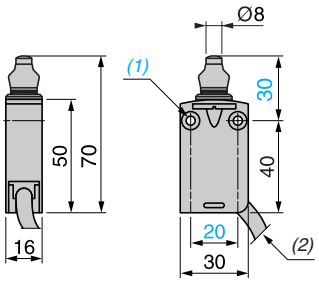
Switch actuation		By 30° cam			By any moving part
Type of actuation					
Maximum actuation speed		1.5 m/s (4.92 ft/s)			1 m/s (3.28 ft/s)
Minimum force or torque	For tripping	0.1 N•m (0.89 lb-in)			
	For positive opening	0.5 N•m (4.43 lb-in)			—
Cabling		PvR cable, 1 m (3.3 ft) long: 5 x 0.75 mm^2 for 2-pole contact versions; 7 x 0.5 mm^2 for 3-pole contact versions, 9 x 0.34 mm^2 for 4-pole contact versions. For other cable lengths, see page 44.			

NOTE: For more information, consult pages 40–42.

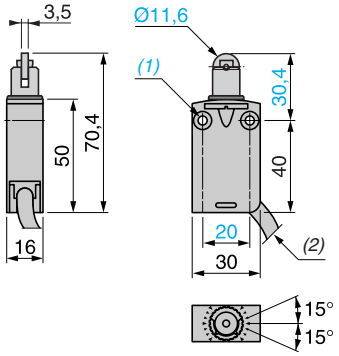
XCMD2•10L1



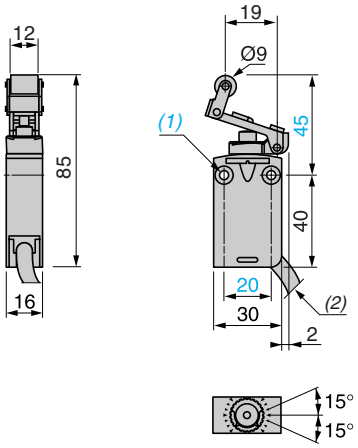
XCMD2•11L1



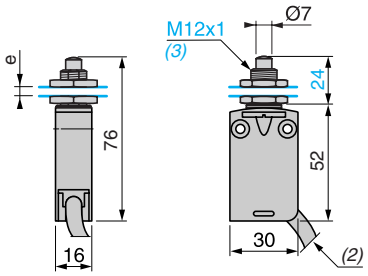
XCMD2•02L1



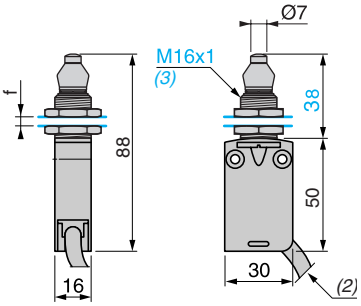
XCMD2•24L1



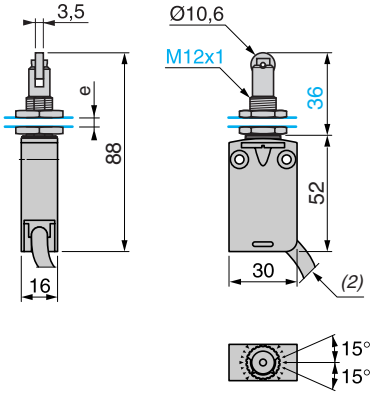
XCMD2•F0L1



XCMD2•G1L1



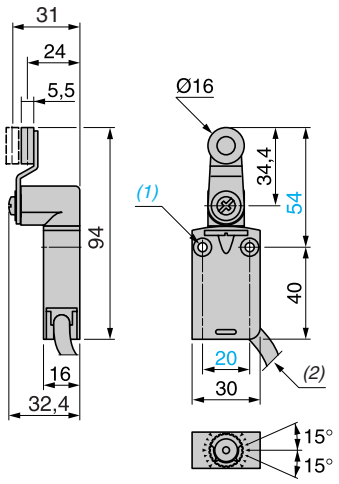
XCMD2•F2L1



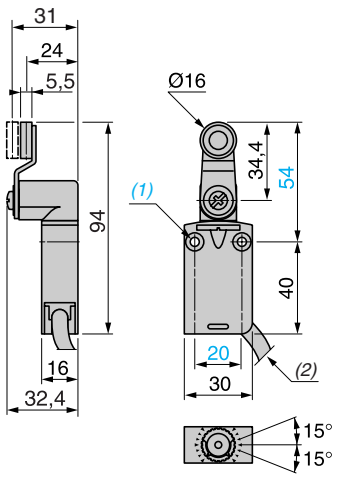
1. 2 mounting holes Ø 4.2 mm (0.17 in.), counterbored Ø 8 mm (0.31 in.) by 4 mm (0.16 in.) deep.
2. Overall diameter of cable 7.5 mm (0.30 in.).
3. Mounting nut thickness 3.5 mm (0.14 in.).

e: 8 mm (0.31 in.) max, panel cut-out Ø 12.5 mm (0.49 in.).
f: 8 mm (0.31 in.) max, panel cut-out Ø 16.5 mm (0.65 in.).

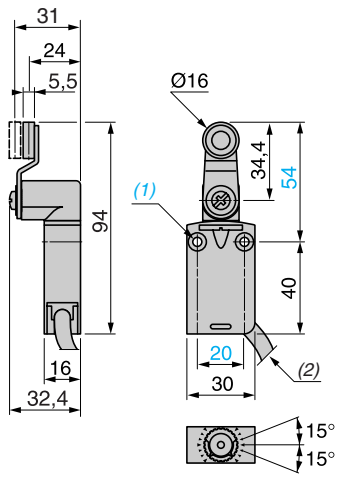
XCMD2•15L1



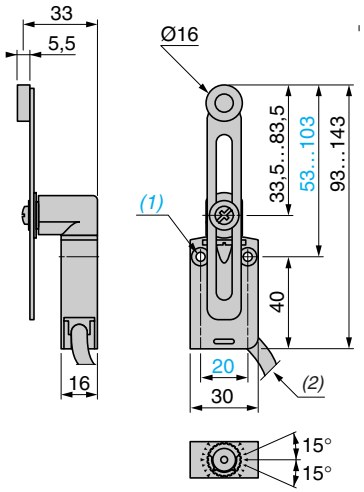
XCMD2•16L1



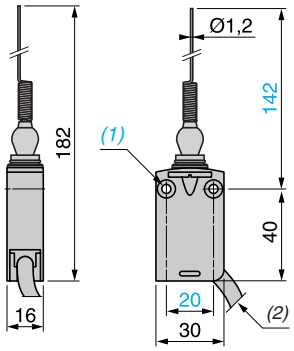
XCMD2•17L1



XCMD2•45L1



XCMD2•06L1

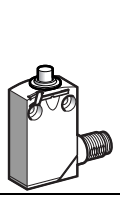
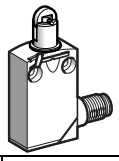
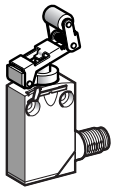
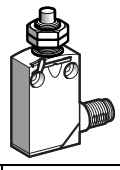
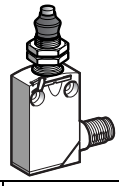
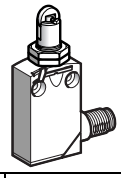
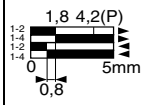
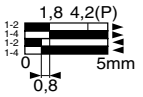
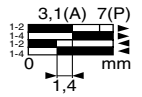
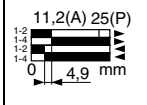
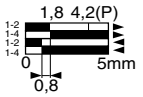
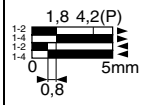
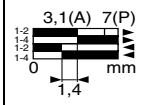
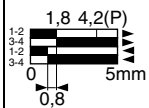
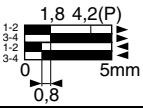
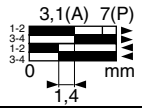
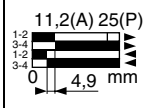
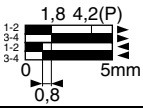
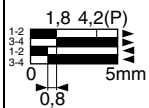
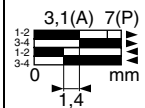
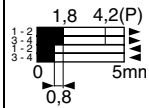
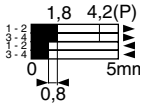
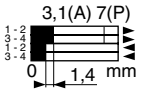
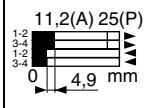
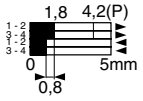
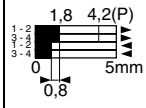
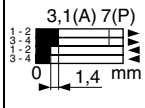
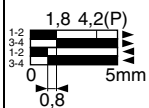
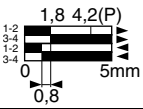
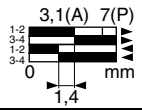
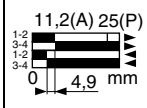
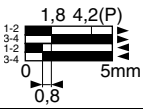
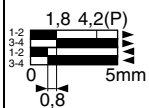
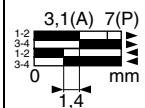
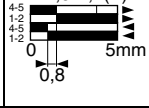
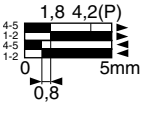
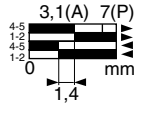
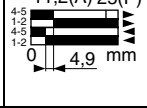
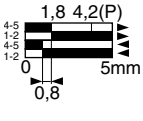
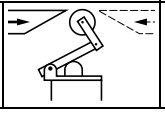


1. 2 mounting holes Ø 4.2 mm (0.17 in.), counterbored Ø 8 mm (0.31 in.) by 4 mm (0.16 in.) deep.
2. Overall diameter of cable 7.5 mm (0.30 in.).

e: 8 mm (0.31 in.) max, panel cut-out Ø 12.5 mm (0.49 in.).

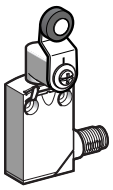
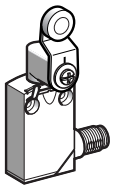
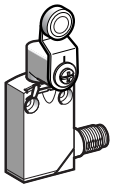
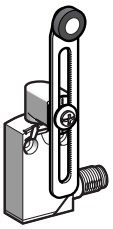
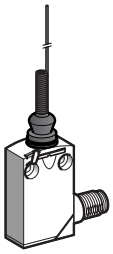
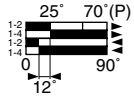
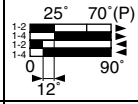
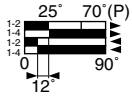
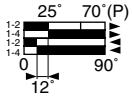
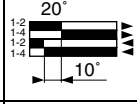
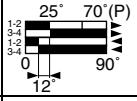
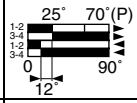
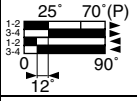
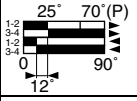
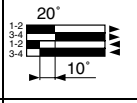
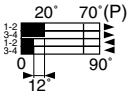
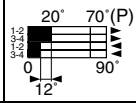
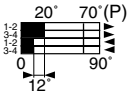
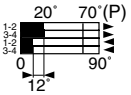
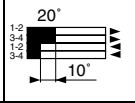
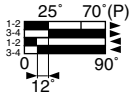
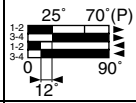
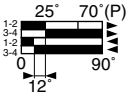
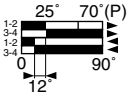
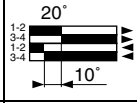
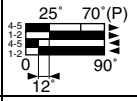
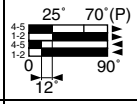
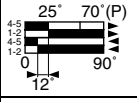
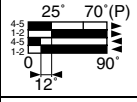
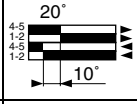
f: 8 mm (0.31 in.) max, panel cut-out Ø 16.5 mm (0.65 in.).

Limit Switches
Osiswitch® Miniature, Metal
Universal, XCMD, Integral or Remote Connector

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							
Single-pole C/O snap action + integral M12 4-pin connector	**XCMD2110M12** 	**XCMD2111M12** 	**XCMD2102M12** 	**XCMD2124M12** 	**XCMD21F0M12** 	**XCMD21G1M12** 	**XCMD21F2M12** 
2-pole N/C + N/O snap action + integral M12 5-pin connector	**XCMD2110C12** ⊖ 	**XCMD2111C12** ⊖ 	**XCMD2102C12** ⊖ 	**XCMD2124C12** ⊖ 	**XCMD21F0C12** ⊖ 	**XCMD21G1C12** ⊖ 	**XCMD21F2C12** ⊖ 
2-pole N/C + N/C snap action + integral M12 5-pin connector	**ZCMD29C12 + ZCE10** ⊖ 	**ZCMD29C12 + ZCE11** ⊖ 	**ZCMD29C12 + ZCE02** ⊖ 	**ZCMD29C12 + ZCE24** ⊖ 	**ZCMD29C12 + ZCEF0** ⊖ 	**ZCMD29C12 + ZCEG1** ⊖ 	**ZCMD29C12 + ZCEF2** ⊖ 
Weight, kg (lb)	0.085 (0.187)	0.085 (0.187)	0.090 (0.198)	0.105 (0.231)	0.100 (0.220)	0.125 (0.276)	0.110 (0.243)
2-pole N/C + N/O snap action + M12 5-pin connector on 0.8 m (2.6 ft) flying lead	**ZCMD21L08R12 + ZCE10** ⊖ 	**ZCMD21L08R12 + ZCE11** ⊖ 	**ZCMD21L08R12 + ZCE02** ⊖ 	**ZCMD21L08R12 + ZCE24** ⊖ 	**ZCMD21L08R12 + ZCEF0** ⊖ 	**ZCMD21L08R12 + ZCEG1** ⊖ 	**ZCMD21L08R12 + ZCEF2** ⊖ 
2-pole N/C + N/O snap action + 7/8" 16UN 5-pin connector on 0.8 m (2.6 ft) flying lead	**ZCMD21L08U78 + ZCE10** ⊖ 	**ZCMD21L08U78 + ZCE11** ⊖ 	**ZCMD21L08U78 + ZCE02** ⊖ 	**ZCMD21L08U78 + ZCE24** ⊖ 	**ZCMD21L08U78 + ZCEF0** ⊖ 	**ZCMD21L08U78 + ZCEG1** ⊖ 	**ZCMD21L08U78 + ZCEF2** ⊖ 
Weight, kg (lb)	0.150 (0.331)	0.150 (0.331)	0.155 (0.342)	0.170 (0.375)	0.165 (0.364)	0.190 (0.419)	0.175 (0.386)
Contact operation	■ contact closed □ contact open		(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator		
Characteristics							
Switch actuation	On end		By 30° cam		On end		By 30° cam
Type of actuation							
Maximum actuation speed	0.5 m/s (1.64 ft/s)						0.1 m/s (0.33 ft/s)
Minimum force or torque — For tripping	8.5 N (1.91 lb)		7 N (1.57 lb)	2.5 N (0.56 lb)	8.5 N (1.91 lb)		7 N (1.57 lb)
Minimum force or torque — For positive opening	42.5 N (9.55 lb)		35 N (7.87 lb)	12.5 N (2.81 lb)	42.5 N (9.55 lb)		35 N (7.87 lb)
Positive operation	Although their design is identical to the pre-cabled switches, the switches incorporating an M12 4-pin connector cannot be marked with the ⊖ symbol because they are single-pole C/O.						

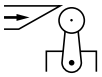
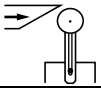
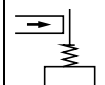
NOTE: For more information, consult pages 40–42.

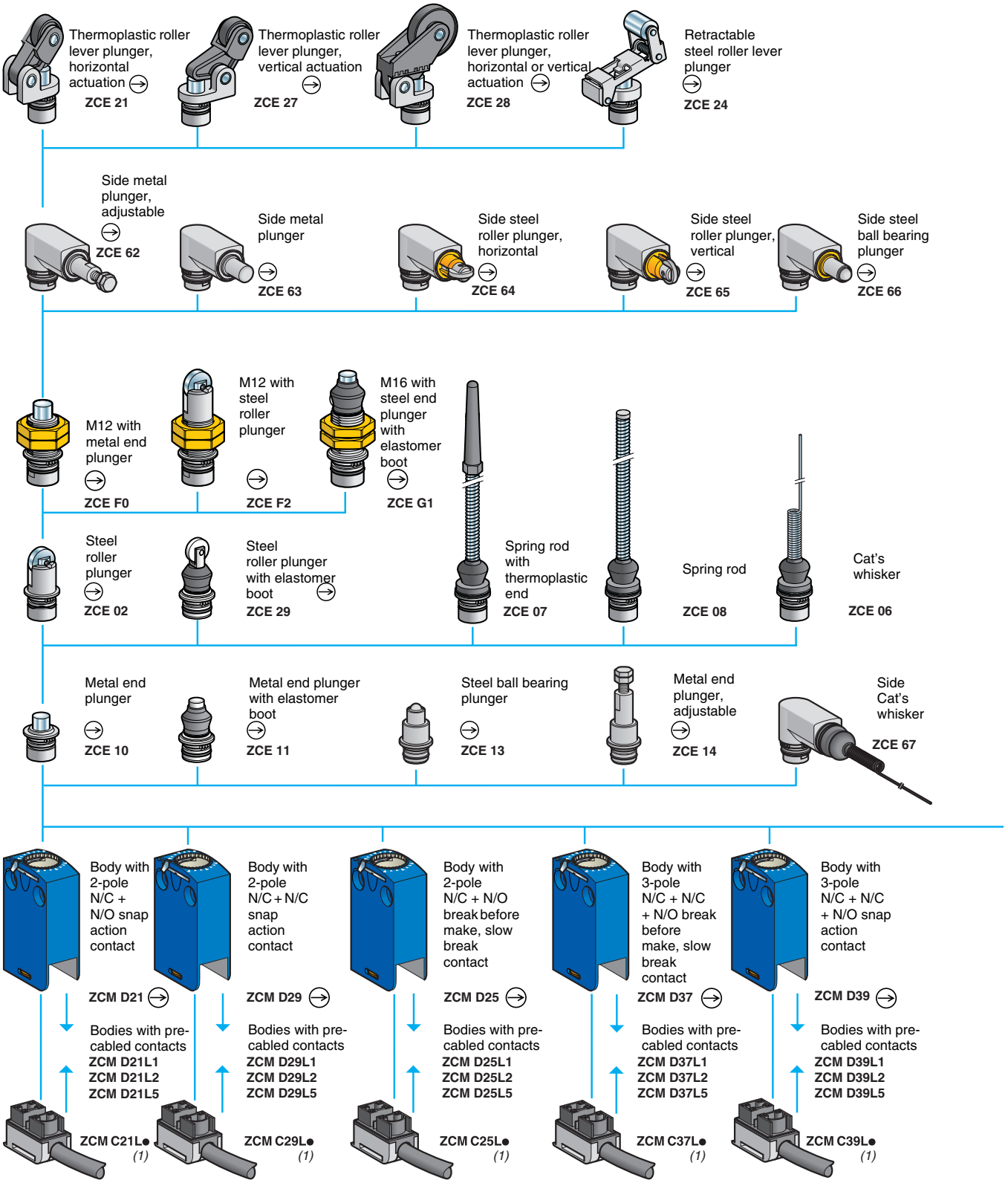
Limit Switches
Osiswitch® Miniature, Metal
Universal, XCMD, Integral or Remote Connector

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)*
Catalog numbers					
 **Single-pole C/O snap action With integral M12 4-pin connector**	**XCMD2115M12** 	**XCMD2116M12** 	**XCMD2117M12** 	**XCMD2145M12** 	**XCMD2106M12** 
 **2-pole N/C + N/O snap action With integral M12 5-pin connector**	**XCMD2115C12** ⊖ 	**XCMD2116C12** ⊖ 	**XCM D2117C12** ⊖ 	**XCMD2145C12** ⊖ 	**XCMD2106C12** 
 **2-pole N/C + N/C snap action With integral M12 5-pin connector**	**ZCMD29C12 + ZCE01 + ZCY15** ⊖ 	**ZCMD29C12 + ZCE01 + ZCY16** ⊖ 	**ZCMD29C12 + ZCE01 + ZCY17** ⊖ 	**ZCMD29C12 + ZCE01 + ZCY45** ⊖ 	**ZCMD29C12 + ZCE06** 
Weight, kg (lb)	0.125 (0.276)	0.130 (0.287)	0.125 (0.276)	0.135 (0.298)	0.085 (0.187)
  **2-pole N/C + N/O snap action With M12 5-pin connector on 0.8 m (2.6 ft) flying lead**	**ZCMD21L08R12 + ZCE01 + ZCY15** ⊖ 	**ZCMD21L08R12 + ZCE01 + ZCY16** ⊖ 	**ZCMD21L08R12 + ZCE01 + ZCY17** ⊖ 	**ZCMD21L08R12 + ZCE01 + ZCY45** ⊖ 	**ZCMD21L08R12 + ZCE06** 
  **2-pole N/C + N/O snap action With 7/8" 16UN 5-pin connector on 0.8 m (2.6 ft) flying lead**	**ZCMD21L08U78 + ZCE01 + ZCY15** ⊖ 	**ZCMD21L08U78 + ZCE01 + ZCY16** ⊖ 	**ZCMD21L08U78 + ZCE01 + ZCY17** ⊖ 	**ZCMD21L08U78 + ZCE01 + ZCY45** ⊖ 	**ZCMD21L08U78 + 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 □ contact open	(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

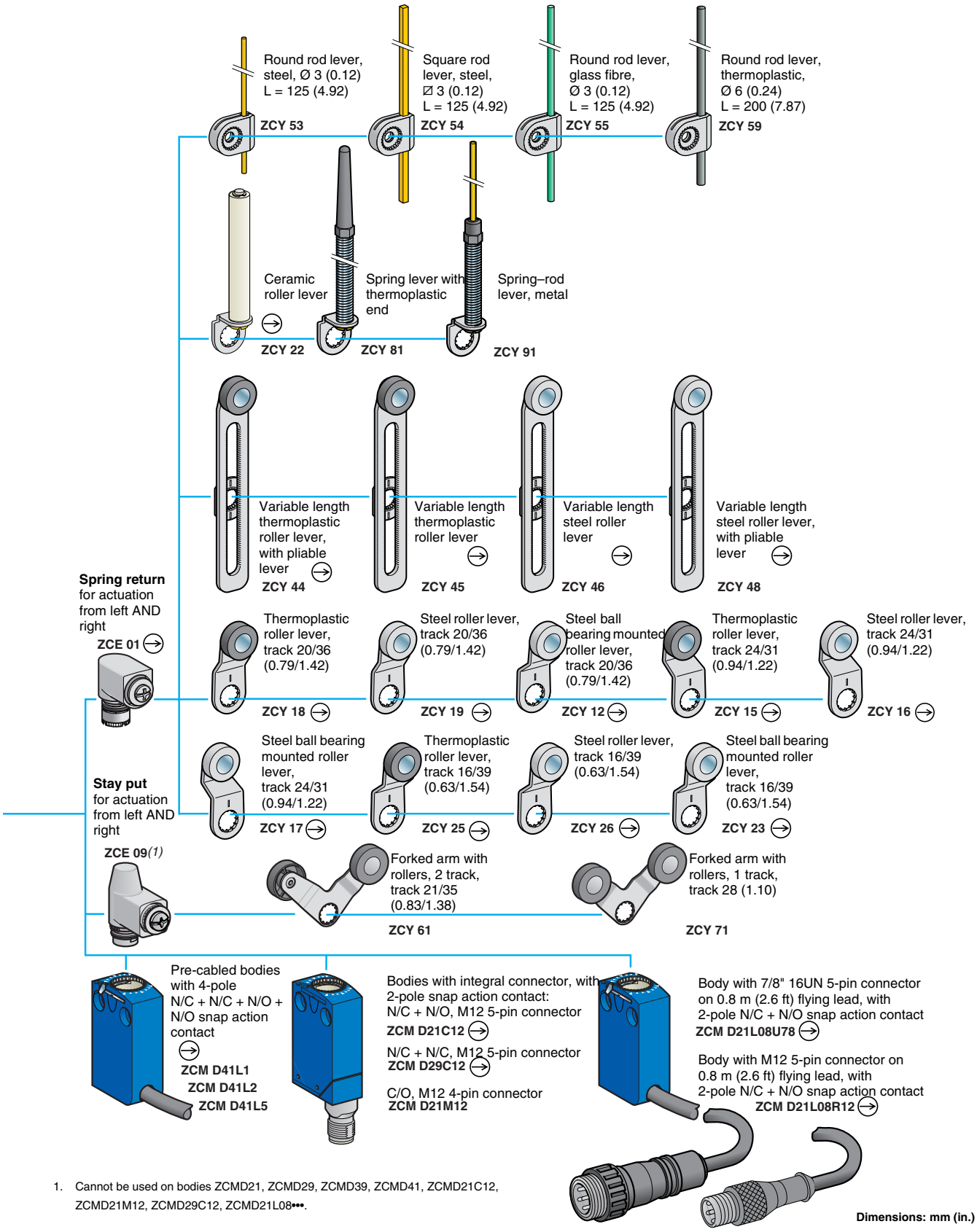
1. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mounting.

Characteristics

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)			—
Positive operation		Although their design is identical to the pre-cabled switches, the switches incorporating an M12 4-pin connector cannot be marked with the ⊖ symbol because they are single-pole C/O.			



1. Pre-cabled connection components: replace the "•" in the catalog number with the required cable length in meters, either: 1, 2, 3, 5, 7 or 10.
Example: ZCM C21L• becomes ZCM C21L7 for a 7 m (23.0 ft) cable.
Note: only cable lengths of 1, 2 and 5 m (3.3, 6.6, and 16.4 ft) are available for pre-cabled connection components ZCM C37L• and ZCM C39L•.



1. Cannot be used on bodies ZCMD21, ZCMD29, ZCMD39, ZCMD41, ZCMD21C12, ZCMD21M12, ZCMD29C12, ZCMD21L08•••.

Dimensions: mm (in.)

Special Features and Catalog Number Explanation

Interpretation of the Catalog Number

XCM | **D** | **21** | **02 ▲** | **L1**

XCM—Assembled unit
ZCM—Body, contacts and base

Body (or base)
D—Metal Modular
N—Plastic (not modular)
C—Plug-in Base (with ZCM only)

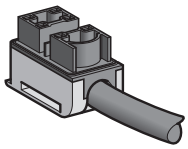
Contact Description
21—1 N.O. + 1 N.C. Snap Action Silver
25—1 N.O. + 1 N.C. Slow Make/Break Silver
29—1 N.C. + 1 N.C. Snap Action Silver
37—1 N.O. + 2 N.C. Slow Make/Break Silver
39—1 N.O. + 2 N.C. Snap Action Silver
41—2 N.O. + 2 N.C. Snap Action Silver
61—1 N.O. + 1 N.C. Snap Action Gold
65—1 N.O. + 1 N.C. Slow Make/Break Gold
69—1 N.C. + 1 N.C. Snap Action Gold
77—1 N.O. + 2 N.C. Slow Make/Break Gold
79—1 N.O. + 2 N.C. Snap Action Gold
81—2 N.O. + 2 N.C. Snap Action Gold

Head Assembly ●
01—Rotary Head without Lever Arm
02—Steel Roller Plunger
05—Rotary Head without lever arm / Programmable ♦
06—Cat Whisker
07—Spring Rod with Plastic End ■
08—Spring Rod ■
09—Maint. Rotary without Arm ■
10—Top Push Rod Plunger
11—Booted Top Push Rod Pl.
13—Top Ball Bearing Plunger ■
14—Adjustable Top Plunger ■
21—One-way Horiz. Plastic Roller
24—Retractable Steel Roller, 9 mm (0.35 in.)
27—One-way Vert. Plastic Roller
28—One-way Horiz. or Vert. Roller
29—Booted Top Roller Plunger ■
62—Adjust. Side Push Rod Pl. ■
63—Side Push Rod Plunger ■
64—Horiz. Side Roller Plunger ■
65—Vertical Side Roller Plunger ■
66—Side Ball Bearing Plunger ■
67—Horizontal Cat Whisker ■
F0—M12 Threaded Plunger Head ■
F2—M12 Threaded Roller Pl. Hd. ■
G1—M16 Threaded Booted Pl. Hd. ■
H0—M18 Threaded Plunger Head ■
H2—M18 Threaded Roller Pl. Hd. ■

Cable Length
L1—1 m (3.3 ft)
L2—2 m (6.6 ft)
L3—3 m (9.8 ft)
L5—5 m (16.4 ft)
L7—7 m (23.0 ft)
L10—10 m (32.8 ft)

Important Note:
Use this chart for interpretation only. Some possibilities are not shown and some combinations of components are not available. Some switches are not modular. Refer to the additional information in this catalog.
For interpretation of catalog numbers for heads and levers, see page 40.

■ Consult your local field sales office for availability.
▲ Last two digits of lever catalog number occupy this position when rotary heads with levers are required.
● See page 40 for levers.
♦ See page 45 for available levers, specifically allowed for the ZCE05 programmable head.



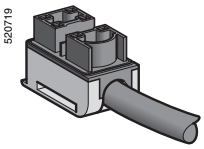
ZCMC2●L●

Components

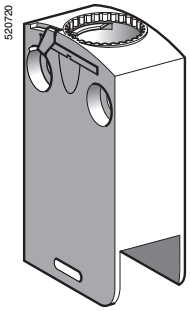
Plug-in base with PVR cable ♦				
Contact type	**Diagram**	**Length of PVR cable m (ft)**	**Catalog number ■**	**Weight lb (kg)**
2-pole				
2-pole N.C. + N.O. snap action		1 (3.3)	**ZCMC21L1**	0.22 (0.100)
2-pole N.C. + N.O. snap action		2 (6.6)	**ZCMC21L2**	0.42 (0.190)
2-pole N.C. + N.O. snap action		3 (9.8)	**ZCMC21L3**	0.62 (0.280)
2-pole N.C. + N.O. snap action		5 (16.4)	**ZCMC21L5**	1.00 (0.440)
2-pole N.C. + N.O. snap action		7 (23.0)	**ZCMC21L7**	1.50 (0.700)
2-pole N.C. + N.O. snap action		10 (32.8)	**ZCMC21L10**	2.10 (0.970)
2-pole N.C. + N.O. slow break-before-make		1 (3.3)	**ZCMC25L1**	0.22 (0.100)
2-pole N.C. + N.O. slow break-before-make		2 (6.6)	**ZCMC25L2**	0.42 (0.190)
2-pole N.C. + N.O. slow break-before-make		3 (9.8)	**ZCMC25L3**	0.62 (0.280)
2-pole N.C. + N.O. slow break-before-make		5 (16.4)	**ZCMC25L5**	1.00 (0.440)
2-pole N.C. + N.O. slow break-before-make		7 (23.0)	**ZCMC25L7**	1.50 (0.700)
2-pole N.C. + N.O. slow break-before-make		10 (32.8)	**ZCMC25L10**	2.10 (0.970)

♦ The plug-in base recepticale must match the contact pin outs in the body. Only the length of cord is variable. See page 40 for 3-pole plug-in bases with cord. The 4-pole units and connector versions do not have component modular bases. See pages 34 and 35 for 4 contact bodies, and pages 38 and 39 for M12 connector bodies.

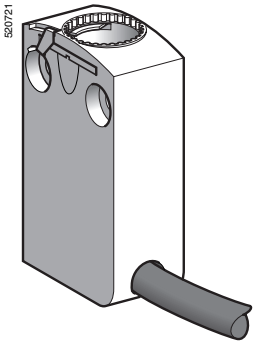
■ Available cable lengths:
ZCMC29L•: 1, 2, 3, 5, 7, and 10 m (3.3, 6.6, 9.8, 16.4, 23.0, and 32.8 ft)
ZCMC37L•: 1, 2, and 5 m (3.3, 6.6, and 16.4 ft)
ZCMC39L•: 1, 2, and 5 m (3.3, 6.6, and 16.4 ft)



ZCMC21E•



ZCMD6•
ZCMD7•



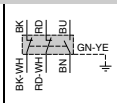
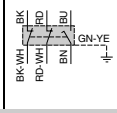
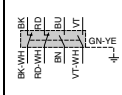
ZCMD81L•

Components

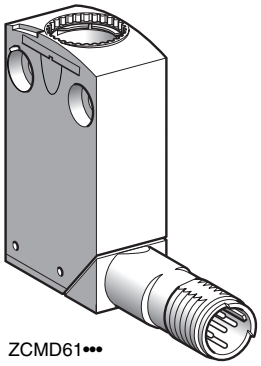
Pre-cabled connection components (CEI cable) *(1)*

Type of contact	Wiring diagram	Length of CEI cable, m (ft)	Catalog Number	Weight kg (lb)
2-pole				
N/C + N/O snap action		1 (3.28)	**ZCMC21E1**	0.100 (0.220)
		2 (6.56)	**ZCMC21E2**	0.190 (0.419)
		3 (9.84)	**ZCMC21E3**	0.280 (0.617)
		5 (16.40)	**ZCMC21E5**	0.440 (0.970)
		7 (22.97)	**ZCMC21E7**	0.700 (1.543)
		10 (32.81)	**ZCMC21E10**	0.970 (2.138)

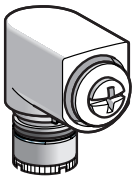
Bodies with gold contacts

Type of contact	Positive operation *(2)*	Wiring diagram	Length of cable, m (ft)	Catalog Number	Weight kg (lb)
2-pole					
N/C + N/O snap action	⊖		—	**ZCMD61**	0.055 (0.121)
N/C + N/C snap action	⊖		—	**ZCMD69**	0.055 (0.121)
N/C + N/O break before make, slow break	⊖		—	**ZCMD65**	0.055 (0.121)
3-pole					
N/C + N/C + N/O snap action	⊖		—	**ZCMD79**	0.055 (0.121)
N/C + N/C + N/O break before make, slow break	⊖		—	**ZCMD77**	0.055 (0.121)
4-pole					
N/C + N/C + N/O + N/O snap action	⊖		1 (3.28)	**ZCMD81L1**	0.160 (0.353)
			2 (6.56)	**ZCMD81L2**	0.255 (0.562)
			5 (16.40)	**ZCMD81L5**	0.525 (1.157)

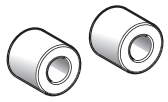
1. Cable not UL, CSA certified.
2. ⊖ bodies with contacts assuring positive opening operation, when properly mounted and using a conforming operator.



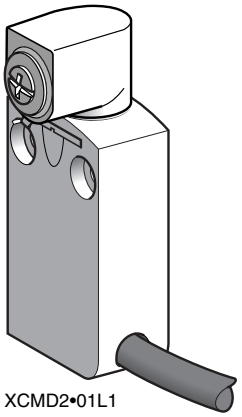
ZCMD61•••



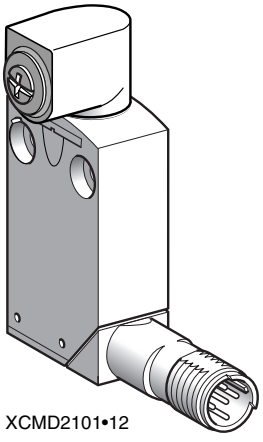
ZCE05



XCMZ06 XCMZ07

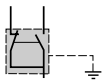


XCMD2•01L1



XCMD2101•12

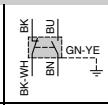
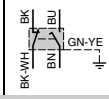
Bodies with gold contacts, integral connector

Type of contact	Positive operation (1)	Wiring diagram	Connector	Catalog Number	Weight kg (lb)
2-pole					
N/C + N/O snap action	—		M12 5-pin	**ZCMD61C12**	0.065 (0.143)
N/C + N/C snap action	—		M12 5-pin	**ZCMD69C12**	0.065 (0.143)
Single-pole					
C/O snap action	—		M12 4-pin	**ZCMD61M12**	0.065 (0.143)

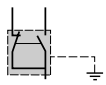
Accessories

Description		Positive operation (1)	Suitable levers for use with head	Catalog Number	Weight kg (lb)
Rotary head, without lever, spring return, for actuation from left AND right or from left OR right *(2)*		⊖	ZCY12, ZCY15, ZCY16, ZCY17, ZCY18, ZCY19, ZCY22, ZCY23, ZCY25, ZCY26, ZCY39, ZCY53, ZCY54, ZCY55, ZCY81	**ZCE05**	0.045 (0.099)
Spacer for mounting multi-track XCMD		—	—	**XCMZ06**	0.005 (0.011)
Spacer for angular positioning of heads with adjustable levers, for values other than -90°, 0° and 90°		—	—	**XCMZ07**	0.005 (0.011)

Bodies with contacts, with rotary head (without operating lever), pre-cabled

Type of contact	Positive operation (1)	Wiring diagram	Length of cable, m (ft)	Catalog Number	Weight kg (lb)
2-pole					
N/C + N/O snap action	⊖		1 (3.28)	**XCMD2101L1**	0.180 (0.397)
N/C + N/O break before make, slow break	⊖		1 (3.28)	**XCMD2501L1**	0.180 (0.397)

Bodies with contacts, with rotary head (without operating lever), integral connector

Type of contact	Positive operation (1)	Wiring diagram	Connector	Catalog Number	Weight kg (lb)
2-pole					
N/C + N/O snap action	⊖		M12 5-pin	**XCMD2101C12**	0.110 (0.243)
Single-pole					
C/O snap action	—		M12 4-pin	**XCMD2101M12**	0.110 (0.243)

1. ⊖ bodies with contacts or head assuring positive opening operation, when properly mounted and using a conforming operator.
2. For programming see page 14.

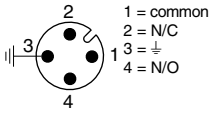
Catalog Numbers of suitable pre-wired female connectors

Type of connector		M12 straight, 4-pin 4 A, 250 V	M12 straight, 5-pin 4 A, 24 V	M12 elbowed, 5-pin 4 A, 24 V	7/8" 16 UN straight, 5-pin, 6 A, 250 V
With cable	L = 2 m (6.56 ft)	XZCP1169L2	XZCP1164L2	XZCP1264L2	XZCP1771L2
	L = 5 m (16.40 ft)	XZCP1169L5	XZCP1164L5	XZCP1264L5	XZCP1771L5
	L = 10 m (32.81 ft)	XZCP1169L10	XZCP1164L10	XZCP1264L10	XZCP1771L10
Weight, kg (lb)		0.105 (0.231)	0.115 (0.254)	0.115 (0.254)	0.190 (0.419)

Connections

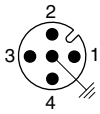
XCMD with connector

4-pin, M12



3 A—250 V
1 = common
2 = N/C
3 = ⏚
4 = N/O

5-pin, M12

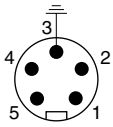


4 A—60 V

XCMD21•• or **ZCMD21••**
1–2 = N/C
3–4 = N/O
5 = ⏚

XCMD29•• or ZCMD29••
1–2 = N/C
3–4 = N/C
5 = ⏚

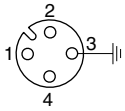
5-pin, 7/8" 16 UN



6 A—250 V
1–2 = N/C
4–5 = N/O
3 = ⏚

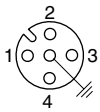
Pre-wired female connectors XZCP

4-pin, M12



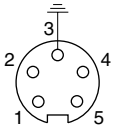
1 = brown
2 = blue
3 = yellow/green ⏚
4 = black

5-pin, M12



1 = brown
2 = white
3 = blue
4 = black
⏚ = yellow/green

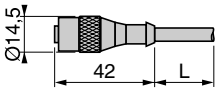
5-pin, 7/8" 16 UN



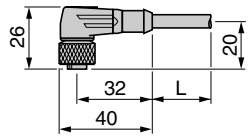
1 = black
2 = blue
3 = yellow/green ⏚
4 = brown
5 = white

Dimensions

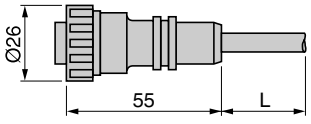
XZCP116•L•



XZCP1264L•



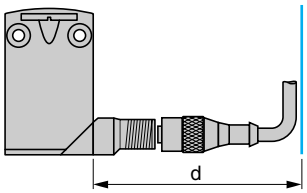
XZCP1771L•



L: cable length 2, 5, or 10 m (6.6, 16.4, or 32.8 ft)

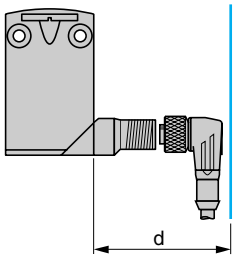
Distances required for plug-in connectors

M12 straight connector



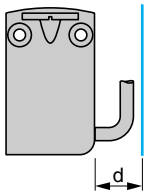
d: min. 65 mm (2.56 in.),
recommended 69 mm (2.72 in.)

M12 elbowed connector



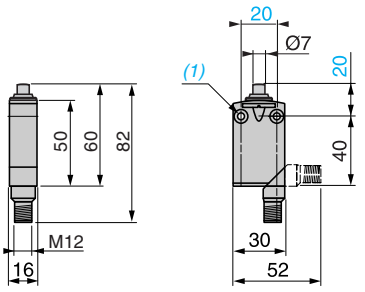
d: min. 42 mm (1.65 in.),
recommended 45 mm (1.77 in.)

Connector on flying lead

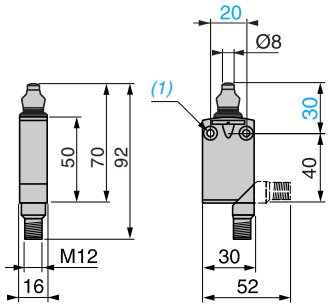


d: min. 20 mm (0.79 in.)

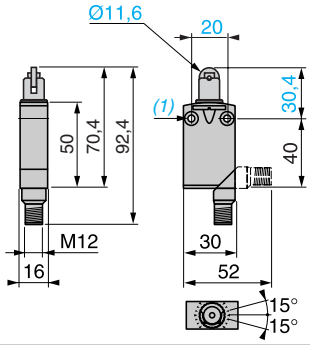
XCMD2•10M12



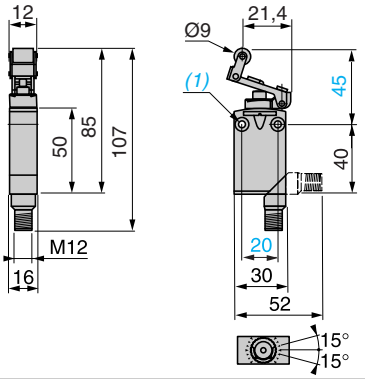
XCMD2•11M12



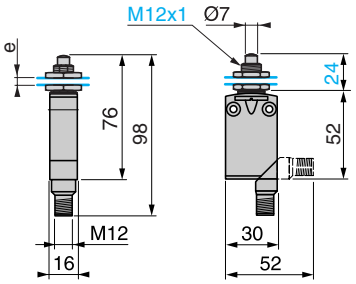
XCMD2•02M12



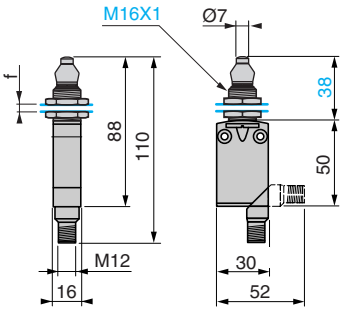
XCMD2•24M12



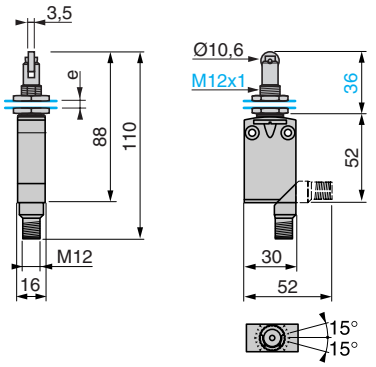
XCMD2•F0M12



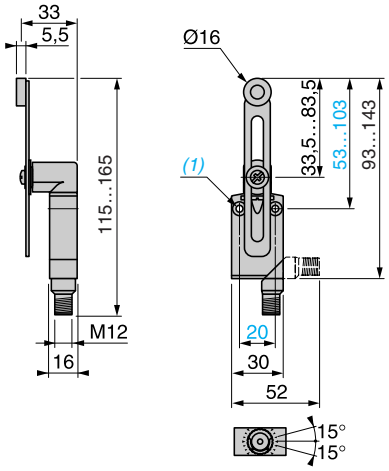
XCMD2•G1M12



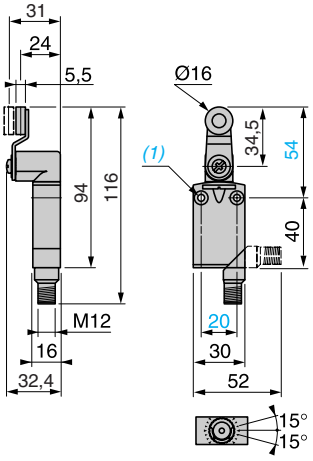
XCMD2•F2M12



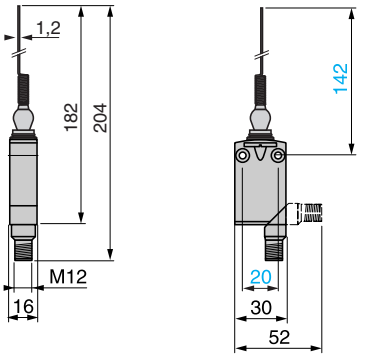
XCMD2•45M12



XCMD2•15M12 / 16M12 / 17M12



XCMD2•06M12

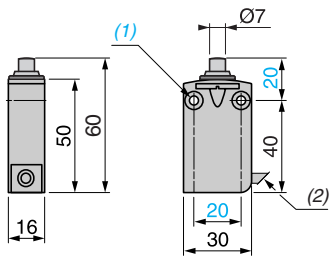


1. 2 mounting holes Ø 4.2 mm (0.17 in.), counterbored Ø 8 mm (0.31 in.) by 4 mm (0.16 in.) deep.

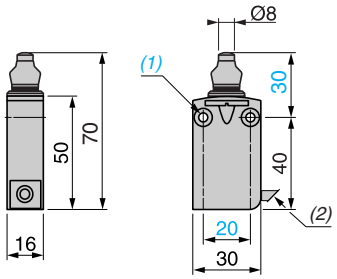
e: 8 mm (0.31 in.) max., panel cut-out Ø 12.5 mm (0.49 in.), mounting nut thickness 3.5 mm (0.14 in.).

f: 8 mm (0.31 in.) max., panel cut-out Ø 16.5 mm (0.65 in.), mounting nut thickness 3.5 mm (0.14 in.).

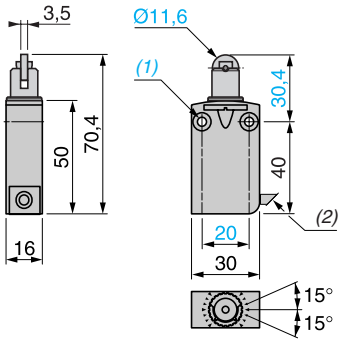
ZCMD21L08••• + ZCE 10



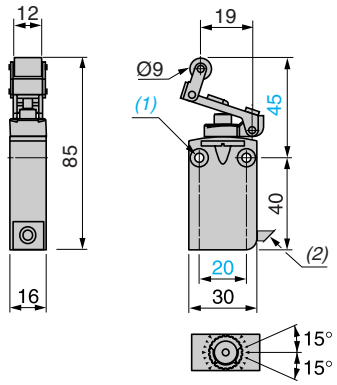
ZCMD21L08••• + ZCE 11



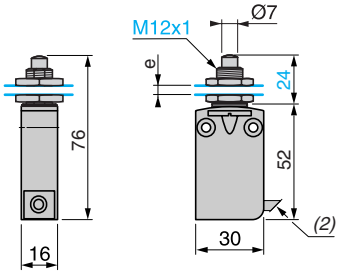
ZCMD21L08••• + ZCE 02



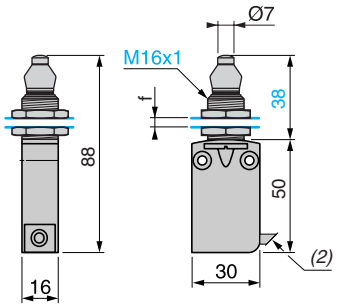
ZCMD21L08••• + ZCE 24



ZCMD21L08••• + ZCE F0



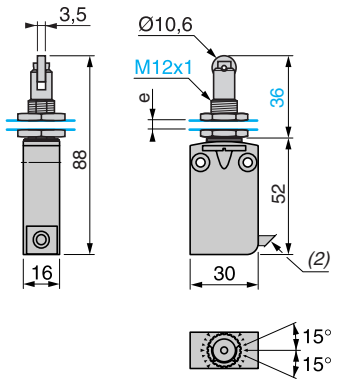
ZCMD21L08••• + ZCE G1



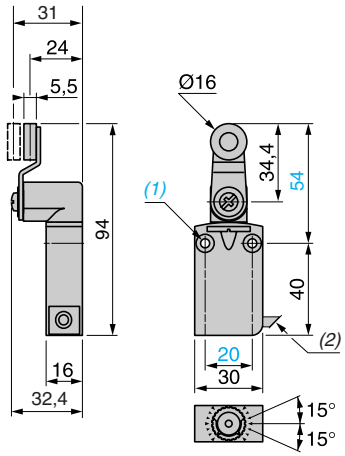
1. 2 mounting holes Ø 4.2 mm (0.17 in.), counterbored Ø 8 mm (0.31 in.) by 4 mm (0.16 in.) deep.
2. Overall diameter 7.5 mm (0.30 in.).

e: 8 mm (0.31 in.) max., panel cut-out Ø 12.5 mm (0.49 in.), mounting nut thickness 3.5 mm (0.14 in.).
f: 8 mm (0.31 in.) max., panel cut-out Ø 16.5 mm (0.65 in.), mounting nut thickness 3.5 mm (0.14 in.).

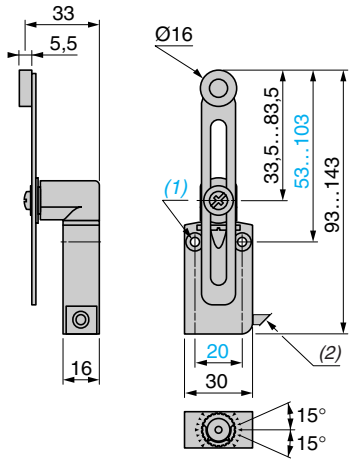
ZCMD21L08••• + ZCEF2



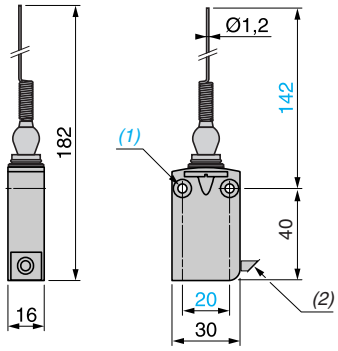
ZCMD21L08••• + ZCE01 + ZCY 15/16/17



ZCMD21L08••• + ZCE01 + ZCY 45



ZCMD21L08••• + ZCE06



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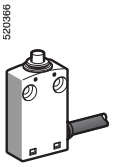
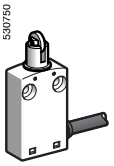
f: 8 mm (0.31 in.) max., panel cut-out Ø 16.5 mm (0.65 in.), mounting nut thickness 3.5 mm (0.14 in.).

■ XCMN
pre-cabled

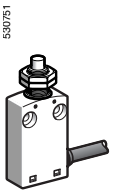
□ With head for linear movement (plunger). Mounting by the body.

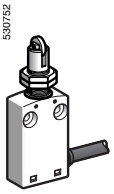




Page 52

□ With head for linear movement (plunger). Mounting by the head.





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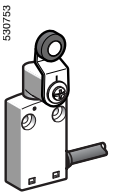
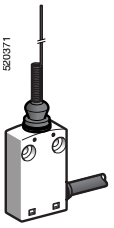
□ With head for rotary movement (lever) or multi-directional.





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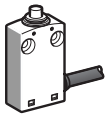
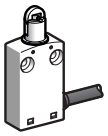
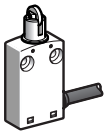
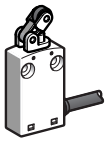
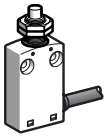
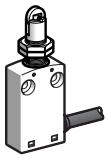
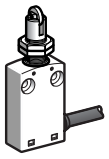
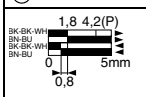
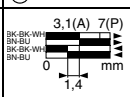
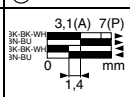
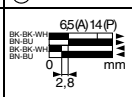
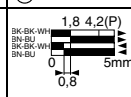
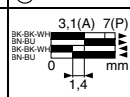
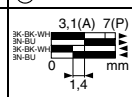
Environmental characteristics

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, 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	Conforming to IEC 60068-2-6	5 gn (10…500 Hz)
Shock resistance	Conforming to IEC 60068-2-27	25 gn (18 ms)
Electric shock protection		Class II conforming to IEC 61140 and NF C 20030
Degree of protection		IP 65 conforming to IEC 60529; IK 04 conforming to EN 50102
Materials	Bodies	Plastic
	Heads	Zamak® zinc alloy

Contact block characteristics

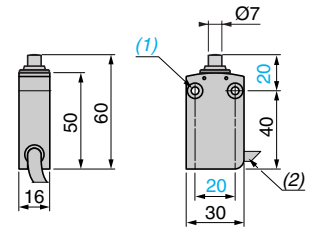
Rated operational characteristics	~ AC-15; B300 (Ue = 240 V, Ie = 1.5 A); Ithe = 6 A
	⎓ DC-13; R300 (Ue = 250 V, Ie = 0.1 A), conforming to IEC 60947-5-1 Appendix A, EN 60947-5-1
Rated insulation voltage	Ui = 400 V degree of pollution 3 conforming to IEC 60947-1 Ui = 300 V conforming to UL 508, CSA C22-2 n° 14
Rated impulse withstand voltage	U imp = 4 kV conforming to IEC 60947-1, IEC 60664
Short-circuit protection	6 A cartridge fuse type gG (gl)

Limit Switches
Osiswitch® Miniature, Plastic
XCMN, Pre-Cabled

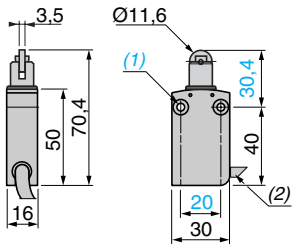
Type of head	Plunger (mounting by the body)				Plunger (mounting by the head)		
							
Type of operator	Metal end plunger	Steel roller plunger for lateral cam approach	Steel roller plunger for traverse cam approach	Thermoplastic roller lever plunger, 1 direction of actuation	M12 with metal end plunger	M12 with steel roller plunger for lateral cam approach	M12 with steel roller plunger for traverse cam approach
Catalog Numbers							
2-pole N/C + N/O snap action	**XCMN2110L1**	**XCMN2102L1**	**XCMN2103L1**	**XCMN2121L1**	**XCMN21F0L1**	**XCMN21F2L1**	**XCMN21F3L1**
							
Weight, kg (lb)	0.080 (0.176)	0.080 (0.176)	0.080 (0.176)	0.090 (0.198)	0.065 (0.143)	0.095 (0.209)	0.095 (0.209)
Contact operation	■ contact closed □ contact open		(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator		
Characteristics							
Switch actuation	On end	By 30° cam			On end	By 30° cam	
Type of actuation							
Maximum actuation speed	0.5 m/s (1.64 ft/s)	0.1 m/s (0.33 ft/s)		0.5 m/s (1.64 ft/s)		0.1 m/s (0.33 ft/s)	
Minimum force or torque For tripping	8.5 N (1.91 lb)	7 N (1.57 lb)		2.5 N (0.56 lb)	8.5 N (1.91 lb)	7 N (1.57 lb)	
Minimum force or torque For positive opening	42.5 N (9.55 lb)	35 N (7.87 lb)		12.5 N (2.81 lb)	42.5 N (9.55 lb)	35 N (7.87 lb)	
Cabling	PvR cable, 4 x 0.75 mm^2, length 1 m (3.28 ft)						

Dimensions

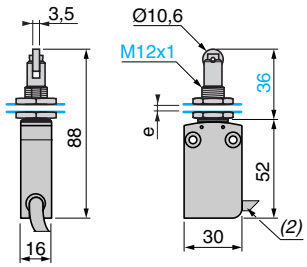
XCMN2110L1



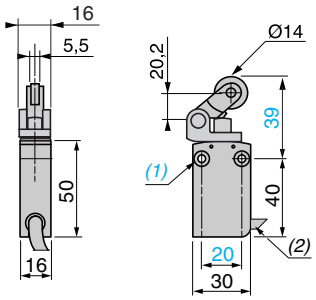
XCMN2102L1, XCMN2103L1



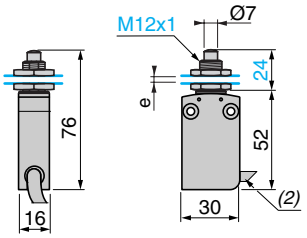
XCMN21F2L1, XCMN21F3L1



XCMN2121L1

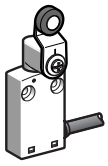
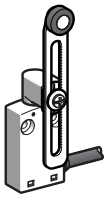
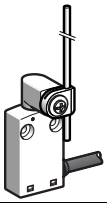
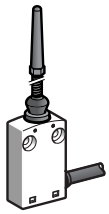
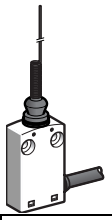
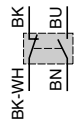
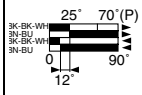
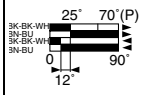
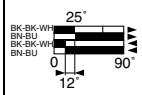
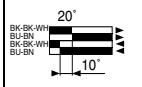
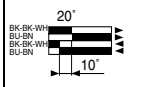


XCMN21F0L1



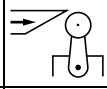
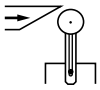
1. 2 mounting holes Ø 4.2 mm (0.17 in.), counterbored Ø 8 mm (0.31 in.) by 4 mm (0.16 in.) deep.
2. Overall diameter 7.5 mm (0.30 in.).

e: 8 mm (0.31 in.) max, panel cut-out Ø 12.5 mm (0.49 in.), mounting nut thickness 3.5 mm (0.14 in.).

Type of head	Rotary (mounting by the body)			Multi-directional	
					
Type of operator	Thermoplastic roller lever	Variable length thermoplastic roller lever	Round thermoplastic rod lever Ø 6 mm (0.24 in.) *(1)*	Spring lever with thermoplastic end *(1)*	Cat's whisker *(1)*
Catalog Numbers					
2-pole N/C + N/O snap action 	**XCMN2115L1** 	**XCMN2145L1** 	**XCMN2159L1** 	**XCMN2107L1** 	**XCMN2106L1** 
Weight, kg (lb)	0.100 (0.220)	0.105 (0.231)	0.080 (0.176)	0.085 (0.187)	0.080 (0.176)
Contact operation	■ contact closed □ contact open	(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

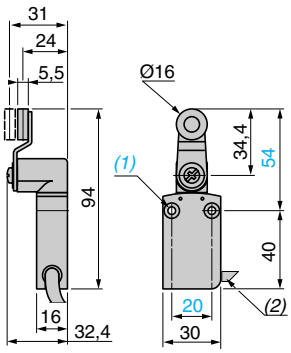
1. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mountings.

Characteristics

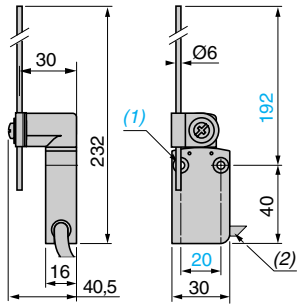
Switch actuation		By 30° cam		By any moving part	
Type of actuation					 
Maximum actuation speed		1.5 m/s (4.92 ft/s)		1 m/s (3.28 ft/s)	1 m/s (3.28 ft/s), any direction
Minimum force or torque	For tripping	0.1 N•m (0.89 lb-in)			
	For positive opening	0.5 N•m (4.43 lb-in)			— —
Cabling		PvR cable, 4 x 0.75 mm², length 1 m (3.28 ft)			

Dimensions

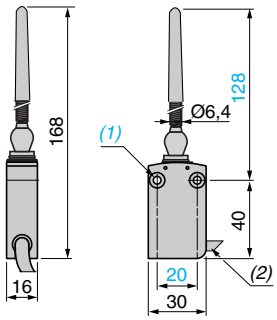
XCMN2115L1



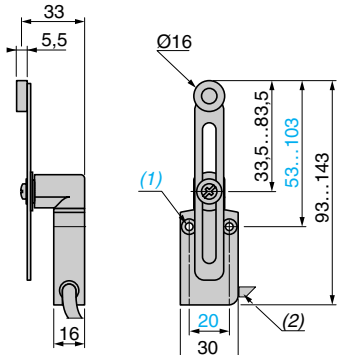
XCMN2159L1



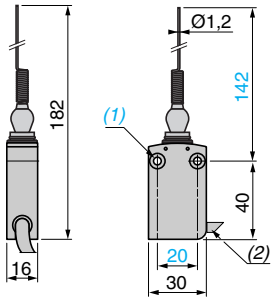
XCMN2107L1



XCMN2145L1



XCMN2106L1



1. 2 mounting holes Ø 4.2 mm (0.17 in.), counterbored Ø 8 mm (0.31 in.) by 4 mm (0.16 in.) deep.
2. Overall diameter 7.5 mm (0.30 in.).

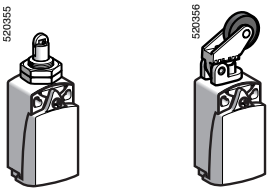
■ XCKP, XCKD
with 1 cable entry
Conforming to CENELEC EN 50047

□ With head for linear movement (plunger). Mounting by the head or by the body.

XCKD

Pages 56 and 60

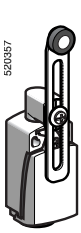
XCKP



Pages 62 and 66

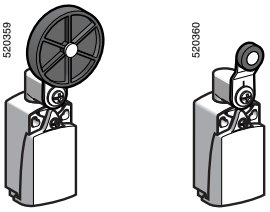
□ With head for rotary movement (lever) or multi-directional. Mounting by the body.

XCKD



Pages 57 and 61

XCKP

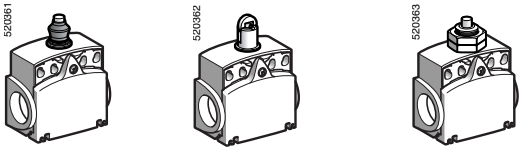


Pages 63 and 67

■ XCKT
with 2 cable entries
Tripping/resetting points and mounting centers conform to CENELEC EN 50047

□ With head for linear movement (plunger). Mounting by the head or by the body.

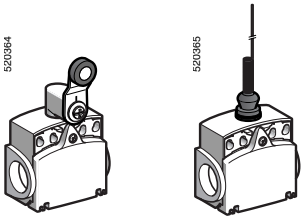
XCKT



Page 68

□ With head for rotary movement (lever) or multi-directional. Mounting by the body.

XCKT



Page 68

Environmental characteristics

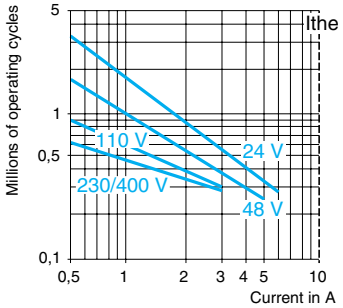
Conforming to standards	Products	IEC 60947-5-1, EN 60947-5-1, UL 508, CSA C22-2 n° 14
	Machine assemblies	IEC 60204-1, EN 60204-1
Product certifications		UL, CSA, CCC
Protective treatment	Standard version	"TC"
Ambient air temperature	Operation	- 25…+70 °C (-13…+158 °F)
	Storage	- 40…+70 °C (-40…+158 °F)
Vibration resistance	Conforming to IEC 60068-2-6	25 gn (10…500 Hz) except switch with head ZCE 24: 20 gn
Shock resistance	Conforming to IEC 60068-2-27	50 gn (11 ms) except heads ZCE08: 15 gn (11 ms) and ZCE24: 30 gn (18 ms)
Electric shock protection		Class II conforming to IEC 61140 and NF C 20-030 for **XCKP** and **XCKT**
		Class I conforming to IEC 61140 and NF C 20-030 for **XCKD**
Degree of protection		IP 66 and IP 67 conforming to IEC 60529; IK 04 conforming to EN 50102 for XCKP and XCKT, IK 06 conforming to EN 50102 for XCKD
Repeat accuracy		0.1 mm on the tripping points, with 1 million operating cycles for head with end plunger
Cable entry or integral connector	Depending on model	Either: tapped entry for PG 11 or PG 13 conduit thread, tapped ISO M16 x 1.5 or ISO M20 x 1.5, tapped 1/2" NPT, tapped PF 1/2 (G1/2) or integral M12 connector
Materials		**XCKD:** Zamak® bodies and heads, **XCKP and XCKT:** plastic bodies, Zamak heads

Contact block characteristics

Rated operational characteristics	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
Rated insulation voltage	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
Rated impulse withstand voltage	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
Positive operation (depending on model)		N/C contacts with positive opening operation conforming to IEC 60 947-5-1 Appendix K, EN 60947-5-1
Resistance across terminals		⩽ 25 mΩ conforming to IEC 60255-7 category 3
Short-circuit protection	XE2•P	10 A cartridge fuse type gG (gl)
	XE3•P	6 A cartridge fuse type gG (gl)
Cabling (screw clamp terminals)	XE2SP•151 and XE2SP2141	Clamping capacity, min: 1 x 0.34 mm^2, max: 2 x 1.5 mm^2
	XE2NP21•1 and XE2NP31•1	Clamping capacity, min: 1 x 0.5 mm^2, max: 2 x 2.5 mm^2
	XE3NP and XE3SP	Clamping capacity, min: 1 x 0.34 mm^2, max: 1 x 1 mm^2 or 2 x 0.75 mm^2
Minimum actuation speed (for head with end plunger)		**XE2SP•151**, **XE2SP2141** and **XE3SP:** 0.01 m/minute (0.03 ft/minute)
		XE2NP21•1, **XE2NP31•1** and **XE3NP**: 6 m/minute (19.68 ft/minute)
Electrical durability		• Conforming to IEC 60947-5-1 Appendix C • Utilization categories AC-15 and DC-13 • Maximum operating rate: 3600 operating cycles/hour • Load factor: 0.5

XE2SP•151, XE2SP2141

a.c. supply
~ 50/60 Hz
⌒ inductive circuit

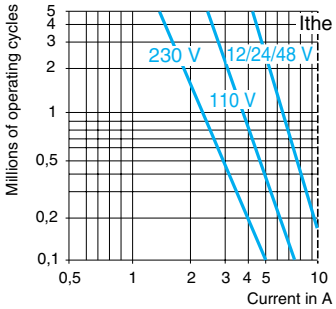


d.c. supply ⎓

Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
⌒	W	10	7	4

XE2NP21•1, XE2NP31•1



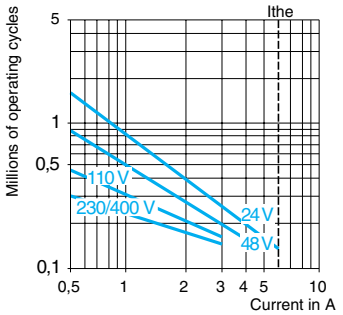
Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
⌒	W	13	9	7

For XE2SP•151 on ~ or ⎓, N/C and N/O contacts simultaneously loaded to the values shown with reverse polarity.

XE3NP••••

a.c. supply
~ 50/60 Hz
⌒ inductive circuit

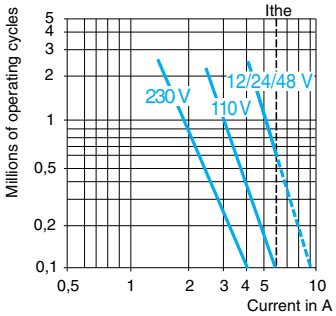


d.c. supply ⎓

Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
⌒	W	3	2	1

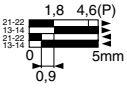
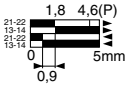
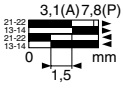
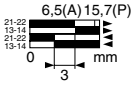
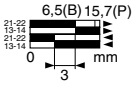
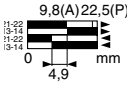
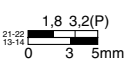
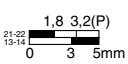
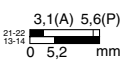
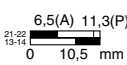
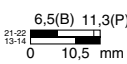
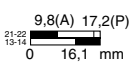
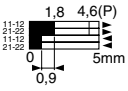
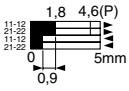
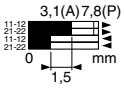
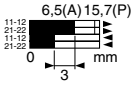
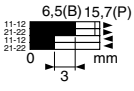
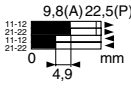
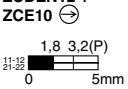
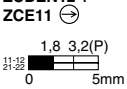
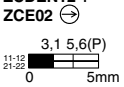
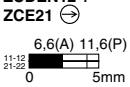
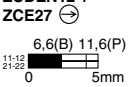
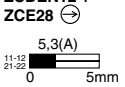
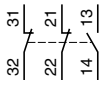
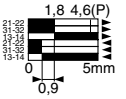
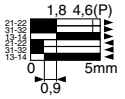
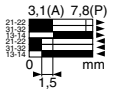
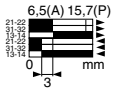
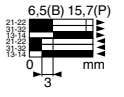
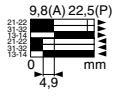
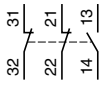
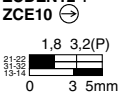
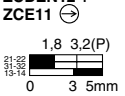
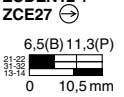
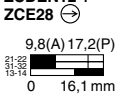
XE3SP••••



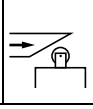
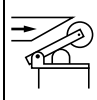
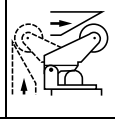
Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
⌒	W	4	3	2

Limit Switches
Osiswitch® Compact, Metal
Universal, XCKD—Complete Units with 1/2" NPT Cable Entry

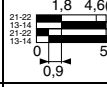
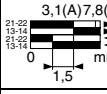
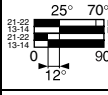
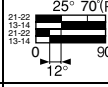
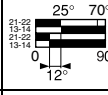
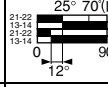
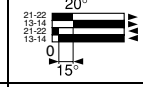
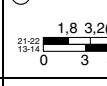
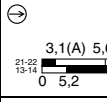
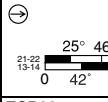
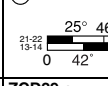
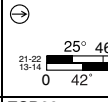
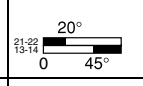
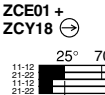
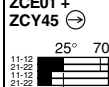
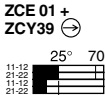
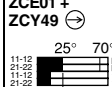
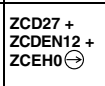
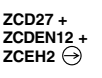
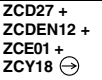
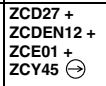
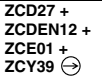
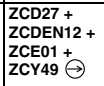
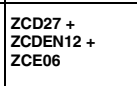
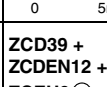
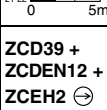
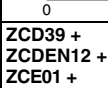
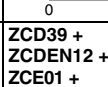
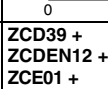
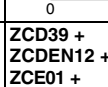
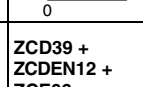
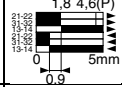
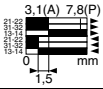
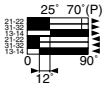
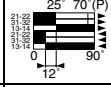
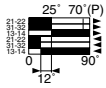
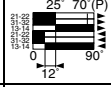
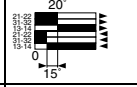
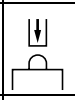
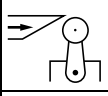
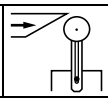
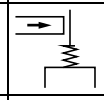
Type of head	Plunger (mounting by the body)					
	Form B *(1)*		Form C *(1)*	Form E *(1)*		
						
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever plunger, vertical actuation in 1 direction	Thermoplastic roller lever plunger, horiz. or vert. actuation in 1 direction
Catalog Numbers *(2) (3)*						
 **2-pole N/C + N/O snap action (XE2S P2151)**	**XCKD2110N12** ⊖ 	**XCKD2111N12** ⊖ 	**XCKD2102N12** ⊖ 	**XCKD2121N12** ⊖ 	**XCKD2127N12** ⊖ 	**XCKD2128N12** ⊖ 
 **2-pole N/C + N/O break before make, slow break (XE2N P2151)**	**XCKD2510N12** ⊖ 	**XCKD2511N12** ⊖ 	**XCKD2502N12** ⊖ 	**XCKD2521N12** ⊖ 	**XCKD2527N12** ⊖ 	**XCKD2528N12** ⊖ 
 **2-pole N/C + N/C snap action (XE2S P2141)**	**ZCD29 + ZCDEN12 + ZCE10** ⊖ 	**ZCD29 + ZCDEN12 + ZCE11** ⊖ 	**ZCD29 + ZCDEN12 + ZCE02** ⊖ 	**ZCD29 + ZCDEN12 + ZCE21** ⊖ 	**ZCD29 + ZCDEN12 + ZCE27** ⊖ 	**ZCD29 + ZCDEN12 + ZCE28** ⊖ 
 **2-pole N/C + N/C simultaneous, slow break (XE2N P2141)**	**ZCD27 + ZCDEN12 + ZCE10** ⊖ 	**ZCD27 + ZCDEN12 + ZCE11** ⊖ 	**ZCD27 + ZCDEN12 + ZCE02** ⊖ 	**ZCD27 + ZCDEN12 + ZCE21** ⊖ 	**ZCD27 + ZCDEN12 + ZCE27** ⊖ 	**ZCD27 + ZCDEN12 + ZCE28** ⊖ 
 **3-pole N/C + N/C + N/O snap action (XE3SP2141)**	**ZCD39 + ZCDEN12 + ZCE10** ⊖ 	**ZCD39 + ZCDEN12 + ZCE11** ⊖ 	**ZCD39 + ZCDEN12 + ZCE02** ⊖ 	**ZCD39 + ZCDEN12 + ZCE21** ⊖ 	**ZCD39 + ZCDEN12 + ZCE27** ⊖ 	**ZCD39 + ZCDEN12 + ZCE28** ⊖ 
 **3-pole N/C + N/C + N/O break before make, slow break (XE3N P2141)**	**ZCD37 + ZCDEN12 + ZCE10** ⊖ 	**ZCD37 + ZCDEN12 + ZCE11** ⊖ 	**ZCD37 + ZCDEN12 + ZCE02** ⊖ 	**ZCD37 + ZCDEN12 + ZCE21** ⊖ 	**ZCD37 + ZCDEN12 + ZCE27** ⊖ 	**ZCD37 + ZCDEN12 + ZCE28** ⊖ 
Weight, kg (lb)	0.180 (0.397)	0.180 (0.397)	0.185 (0.408)	0.195 (0.430)	0.190 (0.419)	0.195 (0.430)
Contact operation	■ contact closed □ contact open		(A)(B) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

Characteristics

Switch actuation		On end		By 30° cam		
Type of actuation						
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1 m/s (3.28 ft/s)		
Minimum force or torque	For tripping	15 N (3.37 lb)	12 N (2.70 lb)	6 N (1.35 lb)		
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	18 N (4.05 lb)		
Cable entry *(3)*		1 entry tapped M16 x 1.5 mm for ISO cable entry, clamping capacity 4 to 8 mm (0.16 to 0.31 in.)				

1. Form conforming to EN 50047. See page 22.
2. Switches with gold contacts or ring type connections: please consult your local sales office.
3. For an entry tapped for a PG 11 conduit thread, replace N12 in the catalog number with **G11**. Examples: XCKD2110N12 becomes **XCKD2110G11**, ZCDEN12 becomes **ZCDEG11**.

Limit Switches
Osiswitch® Compact, Metal
Universal, XCKD—Complete Units with 1/2" NPT Cable Entry

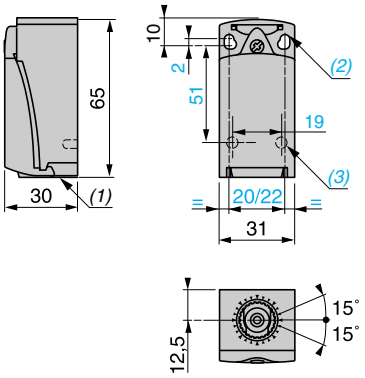
Type of head	Plunger (mounting by the head)		Rotary (mounting by the body) Form A *(1)*				Multi-directional
							
Type of operator	M18 with metal end plunger	M18 with steel roller plunger	Thermoplastic roller lever	Variable length thermoplastic roller lever	Thermoplastic roller lever, Ø 50 mm (1.97 in.)	Variable length thermoplastic roller lever, Ø 50 mm (1.97 in.)	Cat's whisker *(3)*
Catalog Numbers *(2) (4)*							
 **2-pole N/C + N/O snap action (XE2S P2151)**	**XCKD21H0N12** 	**XCKD21H2N12** 	**XCKD2118N12** 	**XCKD2145N12** 	**XCKD2139N12** 	**XCKD2149N12** 	**XCKD2106N12** 
 **2-pole N/C + N/O break before make, slow break (XE2N P2151)**	**XCKD25H0N12** 	**XCKD25H2N12** 	**XCKD2518N12** 	**XCKD2545N12** 	**XCKD2539N12** 	**XCKD2549N12** 	**XCKD2506N12** 
 **2-pole N/C + N/C snap action (XE2S P2141)**	**ZCD29 + ZCDEN12 + ZCEH0** 	**ZCD29 + ZCDEN12 + ZCEH2** 	**ZCD29 + ZCDEN12 + ZCE01 + ZCY18** 	**ZCD29 + ZCDEN12 + ZCE01 + ZCY45** 	**ZCD29 + ZCDEN12 + ZCE 01 + ZCY39** 	**ZCD29 + ZCDEN12 + ZCE01 + ZCY49** 	**ZCD29 + ZCDEN12 + ZCE06** 
 **2-pole N/C + N/C simultaneous, slow break (XE2N P2141)**	**ZCD27 + ZCDEN12 + ZCEH0** 	**ZCD27 + ZCDEN12 + ZCEH2** 	**ZCD27 + ZCDEN12 + ZCE01 + ZCY18** 	**ZCD27 + ZCDEN12 + ZCE01 + ZCY45** 	**ZCD27 + ZCDEN12 + ZCE01 + ZCY39** 	**ZCD27 + ZCDEN12 + ZCE01 + ZCY49** 	**ZCD27 + ZCDEN12 + ZCE06** 
 **3-pole N/C + N/C + N/O snap action (XE3S P2141)**	**ZCD39 + ZCDEN12 + ZCEH0** 	**ZCD39 + ZCDEN12 + ZCEH2** 	**ZCD39 + ZCDEN12 + ZCE01 + ZCY18** 	**ZCD39 + ZCDEN12 + ZCE01 + ZCY45** 	**ZCD39 + ZCDEN12 + ZCE01 + ZCY39** 	**ZCD39 + ZCDEN12 + ZCE01 + ZCY49** 	**ZCD39 + ZCDEN12 + ZCE06** 
 **3-pole N/C + N/C + N/O break before make, slow break (XE3N P2141)**	**ZCD37+ ZCDEN12 + ZCEH0** 	**ZCD37 + ZCDEN12 + ZCEH2** 	**ZCD37 + ZCDEN12 + ZCE01 + ZCY18** 	**ZCD37 + ZCDEN12 + ZCE01 + ZCY45** 	**ZCD37 + ZCDEN12 + ZCE01 + ZCY39** 	**ZCD37 + ZCDEN12 + ZCE01 + ZCY49** 	**ZCD37 + ZCDEN12 + ZCE06** 
Weight, kg (lb)	0.220 (0.485)	0.220 (0.485)	0.225 (0.496)	0.235 (0.518)	0.235 (0.518)	0.245 (0.540)	0.175 (0.386)
Contact operation	■ contact closed □ contact open		(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator		
Characteristics							
Switch actuation	On end	By 30° cam					By any moving part
Type of actuation							
Maximum actuation speed	0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)				1 m/s (3.28 ft/s), any direction
Minimum force or torque — For tripping	15 N (3.37 lb)	10 N (2.25 lb)	0.1 N•m (0.89 lb-in)				0.13 N•m (1.15 lb-in)
Minimum force or torque — For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	0.25 N•m (2.21 lb-in)				—
Cable entry *(4)*	1 entry tapped M16 x 1.5 mm for ISO cable entry, clamping capacity 4 to 8 mm (0.16 to 0.31 in.)						

1. Form conforming to EN 50047. See page 22.
2. Switches with gold contacts or ring type connections: please consult your local sales office.
3. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mountings.
4. For an entry tapped for a PG 11 conduit thread, replace N12 in the catalog number with **G11**. Examples: XCKD21H0N12 becomes **XCKD21H0G11**, ZCDEN12 becomes **ZCDEG11**.

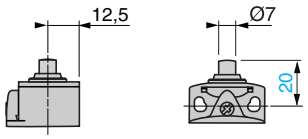
Note: For more information, consult pages 63, 70–71.

Limit Switches
Osiswitch® Compact, Metal
Universal, XCKD—Complete Units with 1/2" NPT Cable Entry

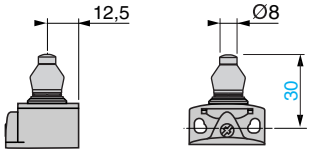
ZCD2• + ZCDEN12 / ZCD3• + ZCDEN12



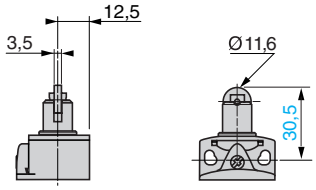
ZCE10



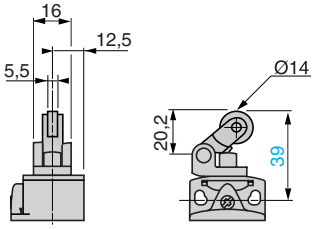
ZCE11



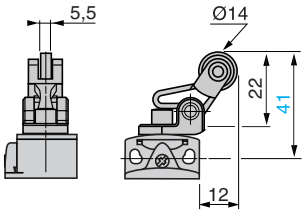
ZCE02



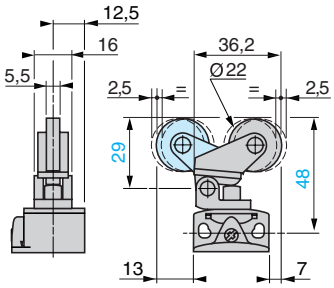
ZCE21



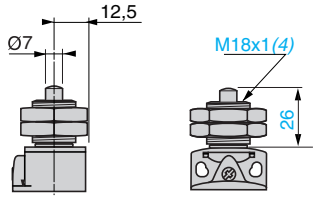
ZCE27



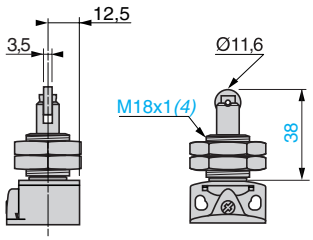
ZCE28



ZCEH0

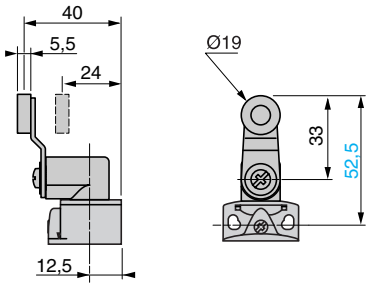


ZCEH2

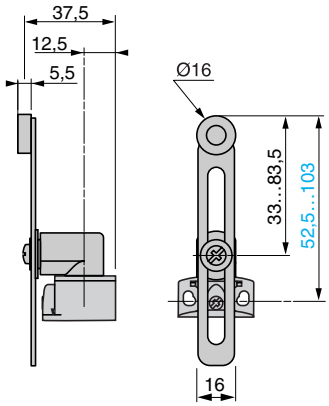


1. Tapped entry for ISO M16 x 1.5 or PG 11 conduit thread.
2. 2 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22 mm (0.87 in.) centers, 2 holes Ø 4.3 mm (0.17 in.) on 20 mm (0.79 in.) centers.
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).
4. Mounting nut thickness 3.5 mm (0.14 in.).

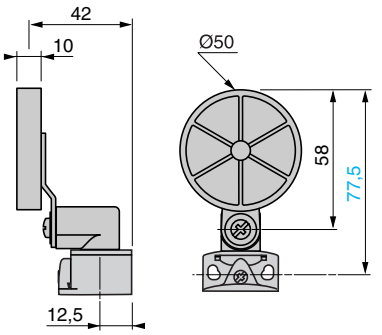
ZCE01 + ZCY18



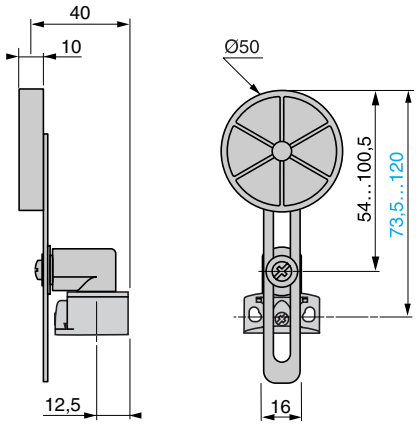
ZCE01 + ZCY45



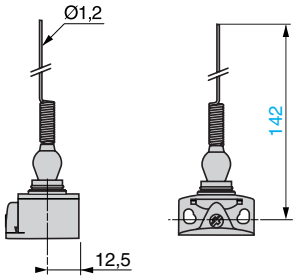
ZCE01 + ZCY39

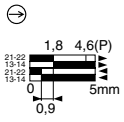
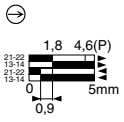
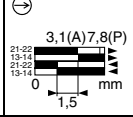
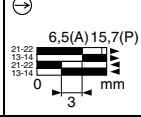
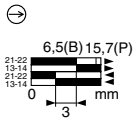
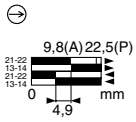
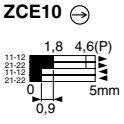
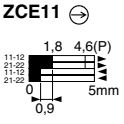
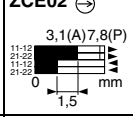
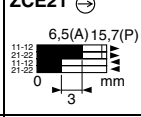
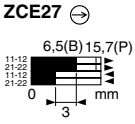
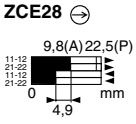


ZCE01 + ZCY49



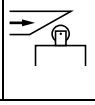
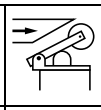
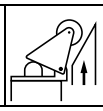
ZCE06



Type of head	Plunger (mounting by the body)					
	Form B *(1)*		Form C *(1)*	Form E *(1)*		
						
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever plunger, vertical actuation in 1 direction	Thermoplastic roller lever plunger, horiz. or vert. actuation in 1 direction
Catalog Numbers						
2-pole N/C + N/O snap action (XE2S P2151) 	**XCKD2110M12** 	**XCKD2111M12** 	**XCKD2102M12** 	**XCKD2121M12** 	**XCKD2127M12** 	**XCKD2128M12** 
2-pole N/C + N/C snap action (XE2S P2141) 	**ZCD29M12 + ZCE10** 	**ZCD29M12 + ZCE11** 	**ZCD29M12 + ZCE02** 	**ZCD29M12 + ZCE21** 	**ZCD29M12 + ZCE27** 	**ZCD29M12 + ZCE28** 
Weight, kg (lb)	0.190 (0.419)	0.190 (0.419)	0.195 (0.430)	0.205 (0.452)	0.200 (0.441)	0.205 (0.452)
Contact operation	contact closed contact open		(A) (B) = cam displacement (P) = positive opening point			

1. Form conforming to EN 50047. See page 22.

Characteristics

Switch actuation		On end	By 30° cam			
Type of actuation						
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1 m/s (3.28 ft/s)		
Minimum force or torque	For tripping	15 N (3.37 lb)	12 N (2.70 lb)	6 N (1.35 lb)		
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	18 N (4.05 lb)		
Connection		M12 5-pin connector, Ui = 60 V, Ie = 4 A maximum, Ith = 4 A				

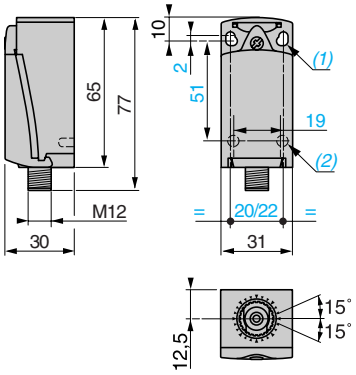
Connections

Integral M12 connector

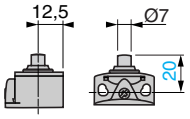
XE2SP2151	XE2SP2141
1-2: N/C	1-2: N/C
3-4: N/O	3-4: N/C
5: ⏚	5: ⏚

Dimensions

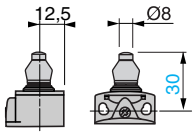
ZCD2•M12



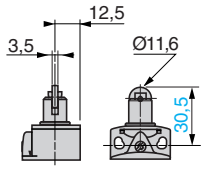
ZCE10



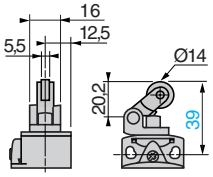
ZCE11



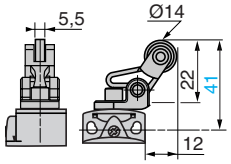
ZCE02



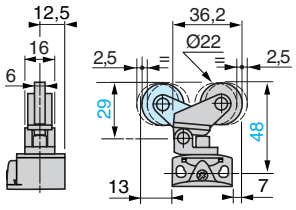
ZCE21



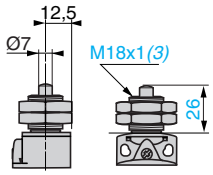
ZCE27



ZCE28

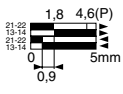
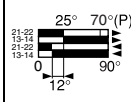
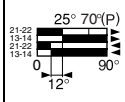
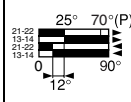
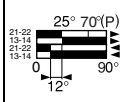
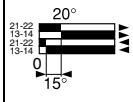
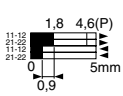
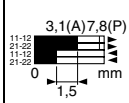
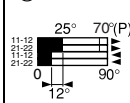
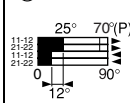
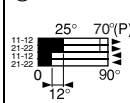
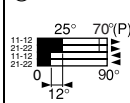
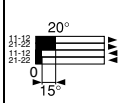


ZCEH0



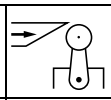
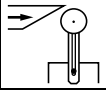
1. 2 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22 mm (0.87 in.) centers, 2 holes Ø 4.3 mm (0.17 in.) on 20 mm (0.79 in.) centers.
2. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).
3. Mounting nut thickness 3.5 mm (0.14 in.).

Limit Switches
Osiswitch® Compact, Metal
Universal, XCKD—Integral M12 Connector

Type of head	Plunger (mounting by the head)		Rotary (mounting by the body) Form A *(1)*				Multi-directional
							
Type of operator	M18 with metal end plunger	M18 with steel roller plunger	Thermoplastic roller lever	Variable length thermoplastic roller lever	Thermoplastic roller lever, Ø 50 mm (1.97 in.)	Variable length thermoplastic roller lever, Ø 50 mm (1.97 in.)	Cat's whisker *(2)*
Catalog Numbers							
2-pole N/C + N/O snap action (XE2S P2151) 	**XCKD21H0M12** 	**XCKD21H2M12** 	**XCKD2118M12** 	**XCKD2145M12** 	**XCKD2139M12** 	**XCKD2149M12** 	**XCKD2106M12** 
2-pole N/C + N/C snap action (XE2S P2141) 	**ZCD29M12 + ZCEH0** 	**ZCD29M12 + ZCEH2** 	**ZCD29M12 + ZCE01 + ZCY18** 	**ZCD29M12 + ZCE01 + ZCY45** 	**ZCD29M12 + ZCE01 + ZCY39** 	**ZCD29M12 + ZCE01 + ZCY49** 	**ZCD29M12 + ZCE06** 
Weight, kg (lb)	0.235 (0.518)	0.235 (0.518)	0.220 (0.485)	0.220 (0.485)	0.220 (0.485)	0.220 (0.485)	0.185 (0.408)
Contact operation	contact closed contact open		(A) = cam displacement (P) = positive opening point				

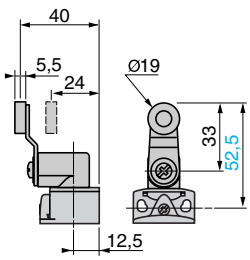
1. Form conforming to EN 50047. See page 22.
2. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mounting.

Characteristics

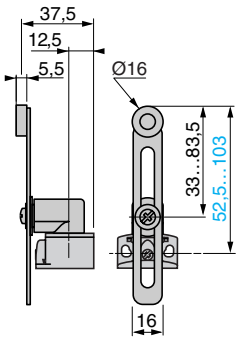
Switch actuation	On end	By 30° cam			By any moving part
Type of actuation					
Maximum actuation speed	0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)		1 m/s (3.28 ft/s), any direction
Minimum force or torque For tripping	15 N (3.37 lb)	10 N (2.25 lb)	0.1 N•m (0.89 lb-in)		0.13 N•m (1.15 lb-in)
Minimum force or torque For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	0.25 N•m (2.21 lb-in)		—
Connection	M12 5-pin connector, Ui = 60 V, Ie = 4 A maximum, Ith = 4 A				

Dimensions

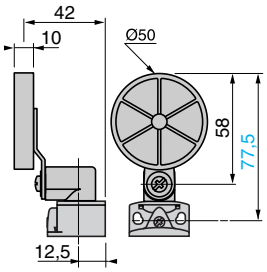
ZCE01 + ZCY18



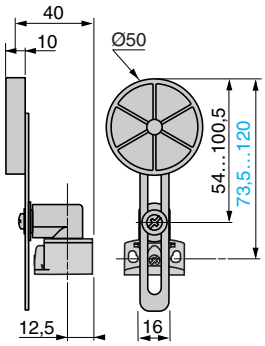
ZCE01 + ZCY45



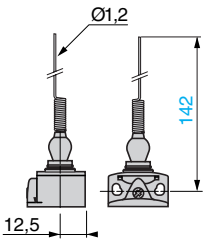
ZCE01 + ZCY39



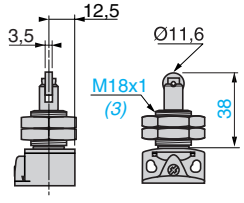
ZCE01 + ZCY49



ZCE06

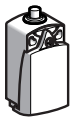
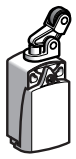
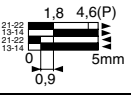
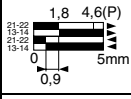
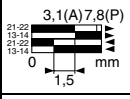
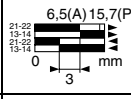
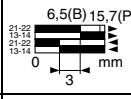
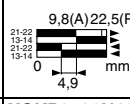
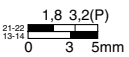
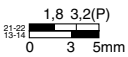
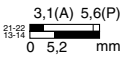
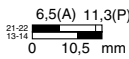
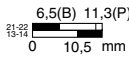
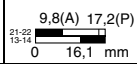
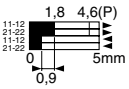
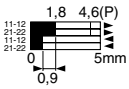
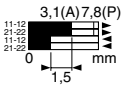
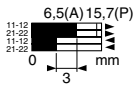
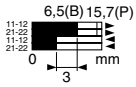
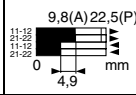
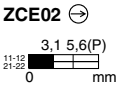
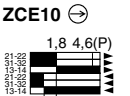
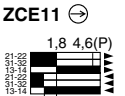
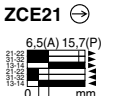
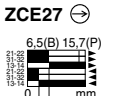
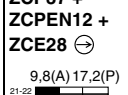


ZCEH2



3. Mounting nut thickness 3.5 mm (0.14 in.)

Limit Switches
Osiswitch® Compact, Plastic
Universal, XCKP—Complete Units with 1/2" NPT Cable Entry

Type of head	Plunger (mounting by the body)					
	Form B *(1)*		Form C *(1)*	Form E *(1)*		
						
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever plunger, vertical actuation in 1 direction	Thermoplastic roller lever plunger, horiz. or vert. actuation in 1 direction
Catalog Numbers *(2) (3)*						
2-pole N/C + N/O snap action (XE2S P2151)	**XCKP2110N12** ⊖ 	**XCKP2111N12** ⊖ 	**XCKP2102N12** ⊖ 	**XCKP2121N12** ⊖ 	**XCKP2127N12** ⊖ 	**XCKP2128N12** ⊖ 
2-pole N/C + N/O break before make, slow break (XE2N P2151)	**XCKP2510N12** ⊖ 	**XCKP2511N12** ⊖ 	**XCKP2502N12** ⊖ 	**XCKP2521N12** ⊖ 	**XCKP2527N12** ⊖ 	**XCKP2528N12** ⊖ 
2-pole N/C + N/C snap action (XE2S P2141)	**ZCP29 + ZCPEN12 + ZCE10** ⊖ 	**ZCP29 + ZCPEN12 + ZCE11** ⊖ 	**ZCP29 + ZCPEN12 + ZCE02** ⊖ 	**ZCP29 + ZCPEN12 + ZCE21** ⊖ 	**ZCP29 + ZCPEN12 + ZCE27** ⊖ 	**ZCP29 + ZCPEN12 + ZCE28** ⊖ 
2-pole N/C + N/C simultaneous, slow break (XE2N P2141)	**ZCP27 + ZCPEN12 + ZCE10** ⊖ 	**ZCP27 + ZCPEN12 + ZCE11** ⊖ 	**ZCP27 + ZCPEN12 + ZCE02** ⊖ 	**ZCP27 + ZCPEN12 + ZCE21** ⊖ 	**ZCP27 + ZCPEN12 + ZCE27** ⊖ 	**ZCP27 + ZCPEN12 + ZCE28** ⊖ 
3-pole N/C + N/C + N/O snap action (XE3S P2141)	**ZCP39 + ZCPEN12 + ZCE10** ⊖ 	**ZCP39 + ZCPEN12 + ZCE11** ⊖ 	**ZCP39 + ZCPEN12 + ZCE02** ⊖ 	**ZCP39 + ZCPEN12 + ZCE21** ⊖ 	**ZCP39 + ZCPEN12 + ZCE27** ⊖ 	**ZCP39 + ZCPEN12 + ZCE28** ⊖ 
3-pole N/C + N/C + N/O break before make, slow break (XE3N P2141)	**ZCP37 + ZCPEN12 + ZCE10** ⊖ 	**ZCP37 + ZCPEN12 + ZCE11** ⊖ 	**ZCP37 + ZCPEN12 + ZCE02** ⊖ 	**ZCP37 + ZCPEN12 + ZCE21** ⊖ 	**ZCP37 + ZCPEN12 + ZCE27** ⊖ 	**ZCP37 + ZCPEN12 + ZCE28** ⊖ 
Weight, kg (lb)	0.090 (0.198)	0.090 (0.198)	0.095 (0.209)	0.105 (0.231)	0.100 (0.220)	0.105 (0.231)
Contact operation	■ contact closed □ contact open		(A)(B) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

Characteristics

Switch actuation		On end	By 30° cam			
Type of actuation						
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1 m/s (3.28 ft/s)		
Minimum force or torque	For tripping	15 N (3.37 lb)	12 N (2.70 lb)	6 N (1.35 lb)		
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	18 N (4.05 lb)		
Cable entry *(3)*		1 entry tapped M16 x 1.5 mm for ISO cable entry, clamping capacity 4 to 8 mm (0.16 to 0.31 in.)				

1. Form conforming to EN 50047. See page 22.
2. Switches with gold contacts or ring type connections: please consult your local sales office.
3. For an entry tapped for a PG 11 conduit thread, replace N12 in the catalog number with **G11**. Examples: XCKP2110N12 becomes **XCKP2110G11**, ZCPEN12 becomes **ZCPEG11**.

Note: For more information, consult pages 63, 70–71.

Limit Switches
Osiswitch® Compact, Plastic
Universal, XCKP—Complete Units with 1/2" NPT Cable Entry

Type of head	Plunger (mounting by the head)		Rotary (mounting by the body)				Multi-directional
			Form A *(1)*				
Type of operator	M18 with metal end plunger	M18 with steel roller plunger	Thermoplastic roller lever	Variable length thermoplastic roller lever	Thermoplastic roller lever, Ø 50 mm (1.97 in.)	Variable length thermoplastic roller lever, Ø 50 mm (1.97 in.)	Cat's whisker *(4)*
Catalog Numbers *(2)*							
2-pole N/C + N/O snap action (XE2S P2151)	**XCKP21H0N12**	**XCKP21H2N12**	**XCKP2118N12**	**XCKP2145N12**	**XCKP2139N12**	**XCKP2149N12**	**XCKP2106N12**
2-pole N/C + N/O break before make, slow break (XE2NP2151)	**XCKP25H0N12**	**XCKP25H2N12**	**XCKP2518N12**	**XCKP2545N12**	**XCKP2539N12**	**XCKP2549N12**	**XCKP2506N12**
2-pole N/C + N/C snap action (XE2SP2141)	**ZCP29 + ZCPEN12 + ZCEH0**	**ZCP29 + ZCPEN12 + ZCEH2**	**ZCP29 + ZCPEN12 + ZCE01 + ZCY18**	**ZCP29 + ZCPEN12 + ZCE01 + ZCY45**	**ZCP29 + ZCPEN12 + ZCE 01 + ZCY39**	**ZCP29 + ZCPEN12 + ZCE01 + ZCY49**	**ZCP29 + ZCPEN12 + ZCE06**
2-pole N/C + N/C simultaneous, slow break (XE2NP2141)	**ZCP27 + ZCPEN12 + ZCEH0**	**ZCP27 + ZCPEN12 + ZCEH2**	**ZCP27 + ZCPEN12 + ZCE01 + ZCY18**	**ZCP27 + ZCPEN12 + ZCE01 + ZCY45**	**ZCP27 + ZCPEN12 + ZCE01 + ZCY39**	**ZCP27 + ZCPEN12 + ZCE01 + ZCY49**	**ZCP27 + ZCPEN12 + ZCE06**
3-pole N/C + N/C + N/O snap action (XE3SP2141)	**ZCP39 + ZCPEN12 + ZCEH0**	**ZCP39 + ZCPEN12 + ZCEH2**	**ZCP39 + ZCPEN12 + ZCE01 + ZCY18**	**ZCP39 + ZCPEN12+ ZCE01 + ZCY45**	**ZCP39 + ZCPEN12 + ZCE01 + ZCY39**	**ZCP39 + ZCPEN12 + ZCE01 + ZCY49**	**ZCP39 + ZCPEN12 + ZCE06**
3-pole N/C + N/C + N/O break before make, slow break (XE3NP2141)	**ZCP37+ ZCPEN12 + ZCEH0**	**ZCP37 + ZCPEN12 + ZCEH2**	**ZCP37 + ZCPEN12 + ZCE01 + ZCY18**	**ZCP37 + ZCPEN12 + ZCE01 + ZCY45**	**ZCP37 + ZCPEN12 + ZCE01 + ZCY39**	**ZCP37 + ZCPEN12 + ZCE01 + ZCY49**	**ZCP37 + ZCPEN12 + ZCE06**
Weight, kg (lb)	0.130 (0.287)	0.130 (0.287)	0.135 (0.298)	0.145 (0.320)	0.145 (0.320)	0.155 (0.342)	0.085 (0.187)
Contact operation	■ contact closed □ contact open		(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator		

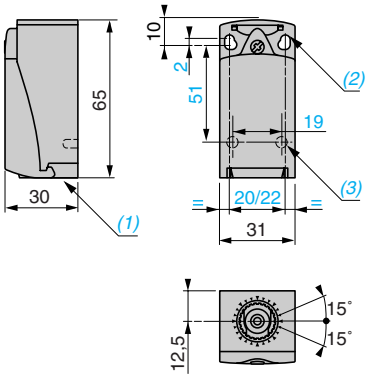
Characteristics

Switch actuation		On end	By 30° cam				By any moving part
Type of actuation							
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)			1 m/s (3.28 ft/s), any direction
Minimum force or torque	For tripping	15 N (3.37 lb)	10 N (2.25 lb)	0.1 N•m (0.89 lb-in)			0.13 N•m (1.15 lb-in)
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	0.25 N•m (2.21 lb-in)			—
Cable entry *(3)*		1 entry tapped M16 x 1.5 mm for ISO cable entry, clamping capacity 4 to 8 mm (0.16 to 0.31 in.)					

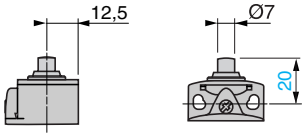
1. Form conforming to EN 50047. See page 22.
2. Switches with gold contacts or ring type connections: please consult your local sales office.
3. For an entry tapped for a PG 11 conduit thread, replace N12 in the catalog number with **G11**. Examples: XCKP21H0N12 becomes **XCKP21H0G11**, ZCPEN12 becomes **ZCPEG11**.
4. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mountings.

Note: For more information, consult pages 63, 70–71.

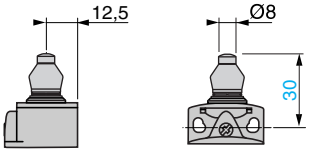
ZCP2• + ZCPEN12 / ZCP3• + ZCPEN12



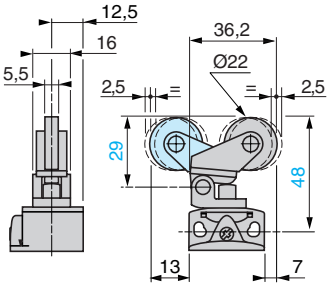
ZCE10



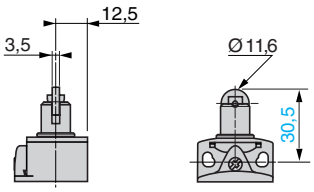
ZCE11



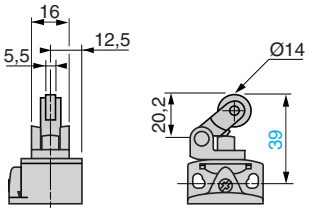
ZCE28



ZCE02



ZCE21



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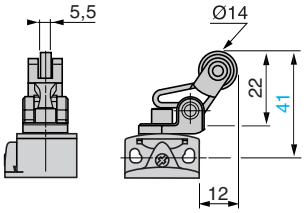
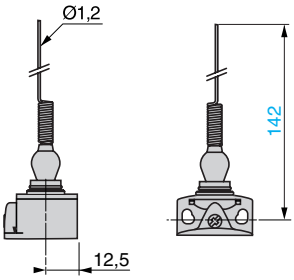
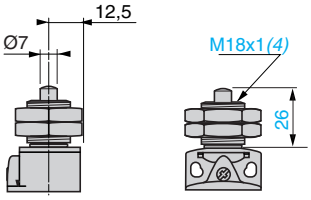


ZCE06



ZCEH0



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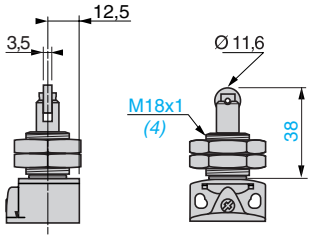
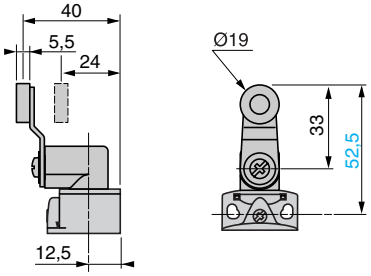
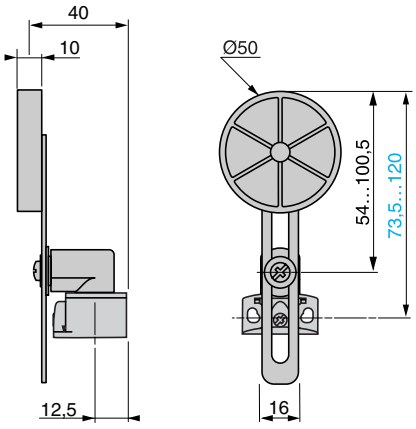


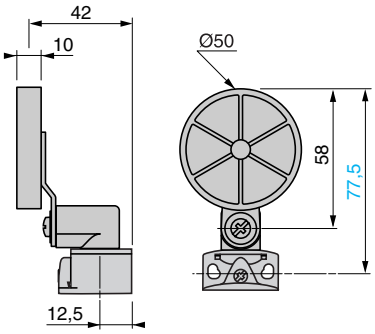
ZCE01 + ZCY18



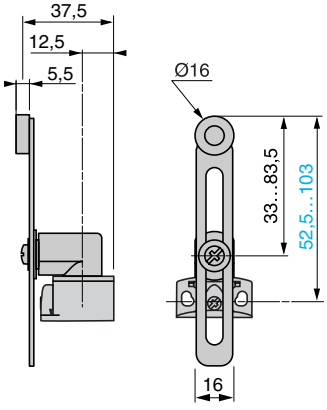
ZCE01 + ZCY49



ZCE01 + ZCY39



ZCE01 + ZCY45



1. Tapped entry for ISO M16 x 1.5 or PG 11 conduit thread.
2. 2 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22 mm (0.87 in.) centers, 2 holes Ø 4.3 mm (0.17 in.) on 20 mm (0.79 in.) centers.
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).
4. Mounting nut thickness 3.5 mm (0.14 in.).

Limit Switches
Osiswitch® Compact, Metal and Plastic
Universal, XCKD, XCKP, and XCKT

Catalog Number Interpretation

For Interpretation of the Catalog Number Only

XCK	P	21	10	N12

XCK—Assembled unit
ZCP—Plastic body components
ZCD—Metal body components
ZCT—Wide body components
ZCPE—Plastic conduit components
ZCDE—Metal conduit components

Body
P—Plastic
D—Metal
T—Plastic wide body

Contact Description
21—1 N.O. + 1 N.C. Snap Action Silver
25—1 N.O. + 1 N.C. Slow Make/Break Silver
26—1 N.O. + 1 N.C. Overlapping Cont. Gold
27—1 N.C. + 1 N.C. Slow Make/Break Silver
28—1 N.O. + 1 N.O. Slow Make/Break Silver
29—1 N.C. + 1 N.C. Snap Action Silver
31—2 N.O. + 1 N.C. Snap Action Silver
35—2 N.O. + 1 N.C. Slow Make/Break Silver ■
37—1 N.O. + 2 N.C. Slow Make/Break Silver ■
39—1 N.O. + 2 N.C. Snap Action Silver
41—2 N.O. + 2 N.C. Snap Action Silver ■
61—1 N.O. + 1 N.C. Snap Action Gold
65—1 N.O. + 1 N.C. Slow Make/Break Gold ■
66—1 N.O. + 1 N.C. Overlapping Cont. Gold ■
67—1 N.C. + 1 N.C. Slow Make/Break Gold ■
68—1 N.O. + 1 N.O. Slow Make/Break Gold
69—1 N.C. + 1 N.C. Snap Action Gold
71—2 N.O. + 1 N.C. Snap Action Gold ■
75—2 N.O. + 1 N.C. Slow Make/Break Gold ■
77—1 N.O. + 2 N.C. Slow Make/Break Gold ■
79—1 N.O. + 2 N.C. Snap Action Gold ■
81—2 N.O. + 2 N.C. Snap Action Gold ■
C1—1 N.O. + 1 N.C. Snap Action Quick Connect ■
C9—1 N.C. + 1 N.C. Snap Action Quick Connect ■

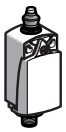
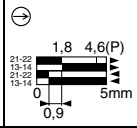
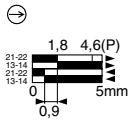
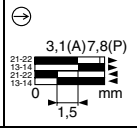
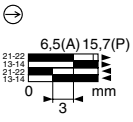
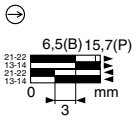
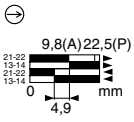
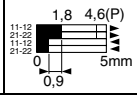
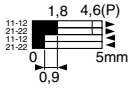
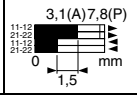
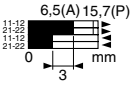
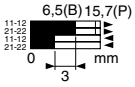
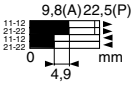
Conduit Threads
F12—PF 1/2
G11—PG 11
G13—PG 13.5
■—4- or 5-Pin Connector
N12—1/2 NPT
P16—ISO M16
P20—M20

Head Assembly
01—Rotary Head without Lever Arm
02—Steel Top Roller Plunger
05—Rotary Head Programmable
06—Cat Whisker
07—Spring Rod with Plastic End ■
08—Spring Rod ■
09—Maint. Rotary without Arm ■
10—Top Push Rod Plunger
11—Booted Top Push Rod Pl.
13—Top Ball Bearing Plunger ■
14—Adjustable Top Plunger ■
21—One-way Horiz. Plastic Roller
24—Retractable Steel Roller, 9 mm (0.35 in.)
27—One-way Vert. Plastic Roller
28—One-way Horiz. or Vert. Roller
29—Booted Top Roller Plunger ■
62—Adjust. Side Push Rod Pl. ■
63—Side Push Rod Plunger ■
64—Horiz. Side Roller Plunger ■
65—Vertical Side Roller Plunger ■
66—Side Ball Bearing Plunger ■
67—Horizontal Cat Whisker ■
F0—M12 Threaded Plunger Head ■
F2—M12 Threaded Roller Plunger Head ■
G1—M16 Threaded Booted Plunger Head ■
H0—M18 Threaded Plunger Head ■
H2—M18 Threaded Roller Plunger Head ■

Important Note:
Use for interpretation only. Not all possibilities are shown and not all combination of components are available. Not all switches are modular. See additional information in this catalog. For interpretation of heads and levers see page 70–71.

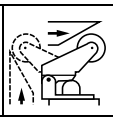
■ Call your local field sales office for availability.

Limit Switches
Osiswitch® Compact, Plastic
Universal, XCKP—Integral M12 Connector

Type of head	Plunger (mounting by the body)					
	Form B *(1)*		Form C *(1)*	Form E *(1)*		
						
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever plunger, vertical actuation in 1 direction	Thermoplastic roller lever plunger, horiz. or vert. actuation in 1 direction
Catalog Numbers						
2-pole N/C + N/O snap action (XE2S P2151) 	**XCKP2110M12** 	**XCKP2111M12** 	**XCKP2102M12** 	**XCKP2121M12** 	**XCKP2127M12** 	**XCKP2128M12** 
2-pole N/C + N/C snap action (XE2S P2141) 	**ZCP29M12 + ZCE10** 	**ZCP29M12 + ZCE11** 	**ZCP29M12 + ZCE02** 	**ZCP29M12 + ZCE21** 	**ZCP29M12 + ZCE27** 	**ZCP29M12 + ZCE28** 
Weight, kg (lb)	0.100 (0.220)	0.100 (0.220)	0.100 (0.220)	0.110 (0.243)	0.110 (0.243)	0.110 (0.243)
Contact operation	■ contact closed □ contact open		(A)(B) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

1. Form conforming to EN 50047. See page 22.

Characteristics

Switch actuation		On end	By 30° cam			
Type of actuation						
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1 m/s (3.28 ft/s)		
Minimum force or torque	For tripping	15 N (3.37 lb)	12 N (2.70 lb)	6 N (1.35 lb)		
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	18 N (4.05 lb)		
Connection		M12 4-pin connector, Ui = 250 V, Ie = 3 A maximum, Ith = 3 A				

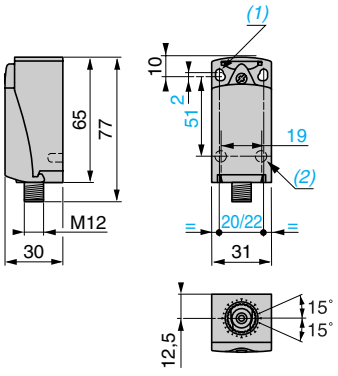
Connections
Integral M12 connector

XE2S P2151
1-2: N/C
3-4: N/O

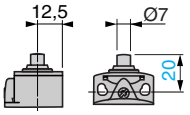
XE2S P2141
1-2: N/C
3-4: N/C

Dimensions

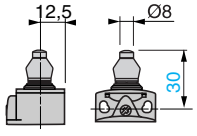
ZCP2•M12



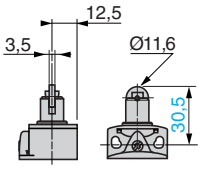
ZCE10



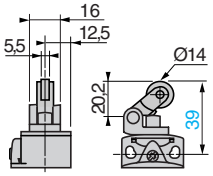
ZCE11



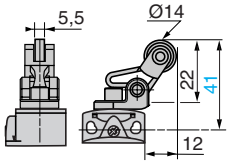
ZCE02



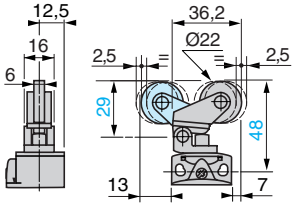
ZCE21



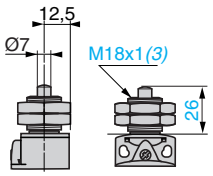
ZCE27



ZCE28

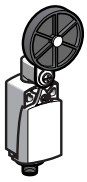
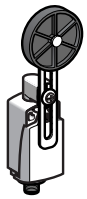
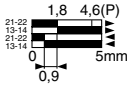
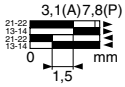
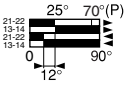
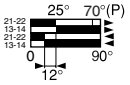
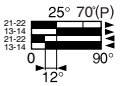
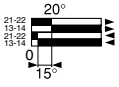
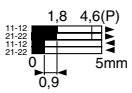
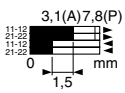
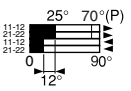
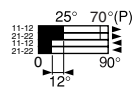
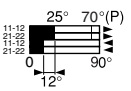
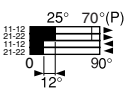
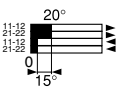


ZCEH0



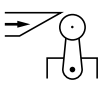
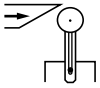
1. 2 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22 mm (0.87 in.) (0.87 in.) centers, 2 holes Ø 4.3 mm (0.17 in.) on 20 mm (0.79 in.) ctrs.
2. 2 x Ø 3 mm (0.12 in.) holes for support studs, depth 4 mm (0.16 in.).
3. Mounting nut thickness 3.5 mm (0.14 in.).

Limit Switches
Osiswitch® Compact, Plastic
Universal, XCKP—Integral M12 Connector

Type of head	Plunger (mounting by the head)		Rotary (mounting by the body) Form A *(1)*				Multi-directional
							
Type of operator	M18 with metal end plunger	M18 with steel roller plunger	Thermoplastic roller lever	Variable length thermoplastic roller lever	Thermoplastic roller lever, Ø 50 mm (1.97 in.)	Variable length thermoplastic roller lever, Ø 50 mm (1.97 in.)	Cat's whisker *(2)*
Catalog Numbers							
2-pole N/C + N/O snap action (XE2SP2151) 	**XCKP21H0M12** ⊖ 	**XCKP21H2M12** ⊖ 	**XCKP2118M126** ⊖ 	**XCKP2145M12** ⊖ 	**XCKP2139M12** ⊖ 	**XCKP2149M12** ⊖ 	**XCKP2106M126** 
2-pole N/C + N/C snap action (XE2S P2141) 	**ZCP29M12 + ZCEH0** ⊖ 	**ZCP29M12 + ZCEH2** ⊖ 	**ZCP29M12 + ZCE01 + ZCY18** ⊖ 	**ZCP29M12 + ZCE01 + ZCY45** ⊖ 	**ZCP29M12 + ZCE01 + ZCY39** ⊖ 	**ZCP29M12 + ZCE01 + ZCY49** ⊖ 	**ZCP29M12 + ZCE06** 
Weight, kg (lb)	0.140 (0.309)	0.140 (0.309)	0.140 (0.309)	0.150 (0.331)	0.155 (0.342)	0.160 (0.353)	0.090 (0.198)
Contact operation	■ contact closed □ contact open		(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator		

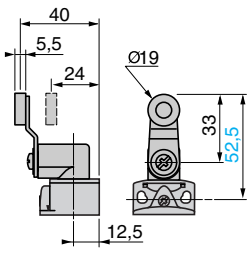
1. Form conforming to EN 50047. See page 22.
2. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mountings.

Characteristics

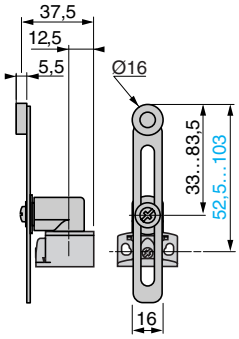
Switch actuation		On end	By 30° cam			By any moving part
Type of actuation						
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)		1 m/s (3.28 ft/s), any direction
Minimum force or torque	For tripping	15 N (3.37 lb)	10 N (2.25 lb)	0.1 N•m (0.89 lb-in)		0.13 N•m (1.15 lb-in)
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	0.25 N•m (2.21 lb-in)		—
Connection		M12 4-pin connector, Ui = 250 V, Ie = 3 A maximum, Ith = 3 A				

Dimensions

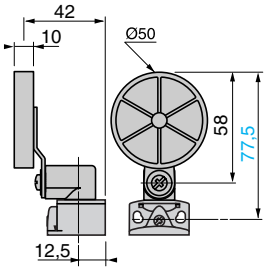
ZCE01 + ZCY18



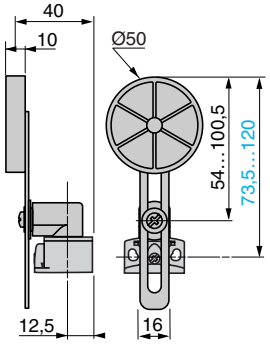
ZCE01 + ZCY45



ZCE01 + ZCY39

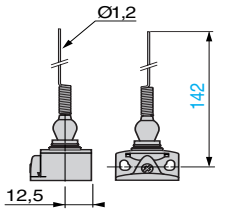


ZCE01 + ZCY49

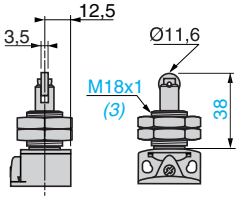


3. Mounting nut thickness 3.5 mm (0.14 in.).

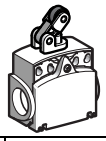
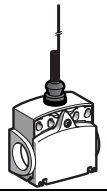
ZCE06



ZCEH2



Limit Switches
Osiswitch® Compact, Plastic
Universal, XCKT—Complete Units with Two Cable Entries and 1/2" NPT Adapter

Type of head	Plunger (mounting by the body)				Multi-directional
	Form B *(1)*		Form C *(1)*	Form E *(1)*	
					
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Cat's whisker *(4)*
Catalog Numbers *(2) (3)*					
2-pole N/C + N/O snap action (XE2SP3151)	**XCKT2110N12** ⊖	**XCKT2111N12** ⊖	**XCKT2102N12** ⊖	**XCKT2121N12** ⊖	**XCKT2106N12**
2-pole N/C + N/O break before make, slow break (XE2NP3151)	**ZCT25N12 + ZCE10** ⊖	**ZCT25N12 + ZCE11** ⊖	**ZCT25N12 + ZCE02** ⊖	**ZCT25N12 + ZCE21** ⊖	**ZCT25N12 + ZCE06**
2-pole N/C + N/O make before break, slow break (XE2N P3161)	**ZCT26N12 + ZCE10** ⊖	**ZCT26N12 + ZCE11** ⊖	**ZCT26N12 + ZCE02** ⊖	**ZCT26N12 + ZCE21** ⊖	**ZCT26N12 + ZCE06**
2-pole N/C + N/C simultaneous, slow break (XE2N P3141)	**ZCT27N12 + ZCE10** ⊖	**ZCT27N12 + ZCE11** ⊖	**ZCT27N12 + ZCE02** ⊖	**ZCT27N12 + ZCE21** ⊖	**ZCT27N12 + ZCE06**
2-pole N/O + N/O simultaneous, slow break (XE2NP3131)	**ZCT28N12 + ZCE10**	**ZCT28N12 + ZCE11**	**ZCT28N12 + ZCE02**	**ZCT28N12 + ZCE21**	**ZCT28N12 + ZCE06**
Weight, kg (lb)	0.100 (0.220)	0.100 (0.220)	0.105 (0.231)	0.115 (0.254)	0.095 (0.209)
Contact operation	■ contact closed □ contact open	(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

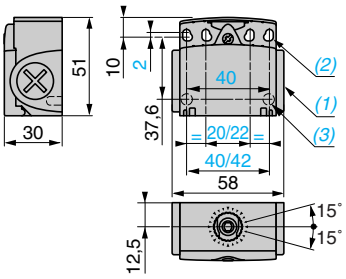
Characteristics

Switch actuation		On end	By 30° cam		By any moving part
Type of actuation					
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1 m/s (3.28 ft/s)	1 m/s (3.28 ft/s), any direction
Minimum force or torque	**For tripping**	15 N (3.37 lb)	12 N (2.70 lb)	6 N (1.35 lb)	0.3 N•m (2.66 lb-in)
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	18 N (4.05 lb)	—
Cable entry *(3)*		2 entries tapped M16 x 1.5 for ISO cable entry. Clamping capacity 4 to 8 mm (0.16 to 0.31 in.) (1 entry fitted with blanking plug).			

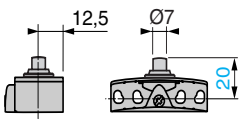
1. Form conforming to EN 50047. See page 22.
2. Switches with gold contacts or ring connections: please consult your local sales office.
3. For cable entries tapped for a PG 11 conduit thread, replace N12 in the catalog number with **G11**. Example: XCKT2110N12 becomes **XCKT2110G11**.
4. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mountings.

Dimensions

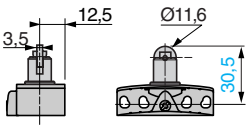
ZCT2•N12



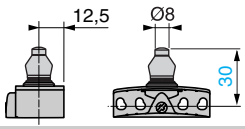
ZCE10



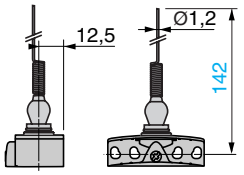
ZCE02



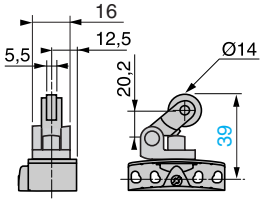
ZCE11



ZCE06

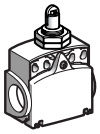
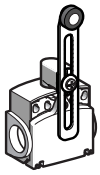
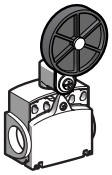
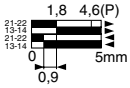
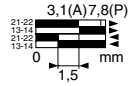
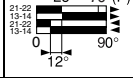
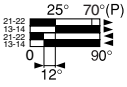
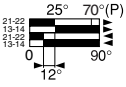
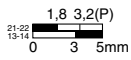
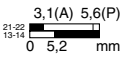
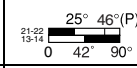
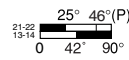
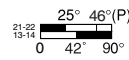
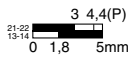
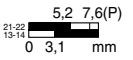
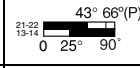
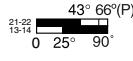
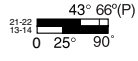
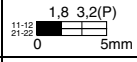
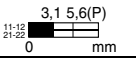
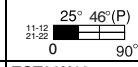
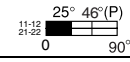
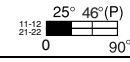
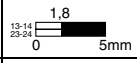
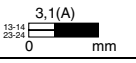
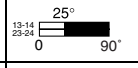
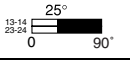
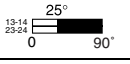


ZCE21

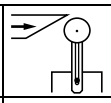


1. 2 tapped entries for ISO M16 x 1.5 or PG 11 conduit thread.
2. 4 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22/42 mm (0.87/1.65 in.) ctrs., 4 holes Ø 4.3 mm (0.17 in.) on 20/40 mm (0.79/1.57 in.) ctrs.
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).

Limit Switches
Osiswitch® Compact, Plastic
Universal, XCKT—Complete Units with Two Cable Entries and 1/2" NPT Adapter

Type of head	Plunger (mounting by the head)		Rotary (mounting by the body)		
			Form A *(1)*		
					
Type of operator	M18 with metal end plunger	M18 with steel roller plunger	Thermoplastic roller lever	Variable length thermoplastic roller lever	Thermoplastic roller lever, Ø 50 mm (1.97 in.)
Catalog Numbers *(2) (3)*					
 **2-pole N/C + N/O snap action (XE2S P3151)**	**XCKT21H0N12** 	**XCKT21H2N12** 	**XCKT2118N12** 	**XCKT2145N12** 	**XCKT2139N12** 
 **2-pole N/C + N/O break before make, slow break (XE2N P3151)**	**ZCT25N12 + ZCEH0** 	**ZCT25N12 + ZCEH2** 	**ZCT25N12 + ZCE01 + ZCY18** 	**ZCT25N12 + ZCE01 + ZCY45** 	**ZCT25N12+ ZCE01 + ZCY39** 
 **2-pole N/O + N/C make before break, slow break (XE2N P3161)**	**ZCT26N12 + ZCEH0** 	**ZCT26N12 + ZCEH2** 	**ZCT26N12 + ZCE01 + ZCY18** 	**ZCT26N12 + ZCE01 + ZCY45** 	**ZCT26N12 + ZCE01 + ZCY39** 
 **2-pole N/C + N/C simultaneous, slow break (XE2N P3141)**	**ZCT27N12 + ZCEH0** 	**ZCT27N12 + ZCEH2** 	**ZCT27N12 + ZCE01 + ZCY18** 	**ZCT27N12 + ZCE01 + ZCY45** 	**ZCT27N12+ ZCE01 + ZCY39** 
 **2-pole N/O + N/O simultaneous, slow break (XE2NP3131)**	**ZCT28N12 + ZCEH0** 	**ZCT28N12 + ZCEH2** 	**ZCT28N12 + ZCE01 + ZCY18** 	**ZCT28N12 + ZCE01 + ZCY45** 	**ZCT28N12 + ZCE01 + ZCY39** 
Weight, kg (lb)	0.145 (0.320)	0.145 (0.320)	0.145 (0.320)	0.155 (0.342)	0.160 (0.353)
Contact operation	■ contact closed □ contact open	(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

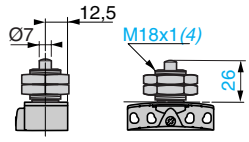
Characteristics

Switch actuation		On end	By 30° cam	
Type of actuation				
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)
Minimum force or torque	For tripping	15 N (3.37 lb)	10 N (2.25 lb)	0.1 N•m (0.89 lb-in)
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	0.25 N•m (2.21 lb-in)
Cable entry *(3)*		2 entries tapped M16 x 1.5 for ISO cable entry. Clamping capacity 4 to 8 mm (0.16 to 0.31 in.) (1 entry fitted with blanking plug).		

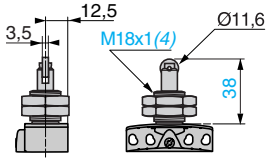
1. Form conforming to EN 50047. See page 22.
2. Switches with gold contacts or ring type connections: please consult your local sales office.
3. For cable entries tapped for a PG 11 conduit thread, replace N12 in the catalog number with **G11**. Example: XCKT21H0N12 becomes **XCKT21H0G11**.

Dimensions

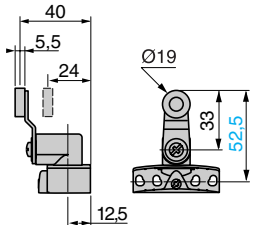
ZCEH0



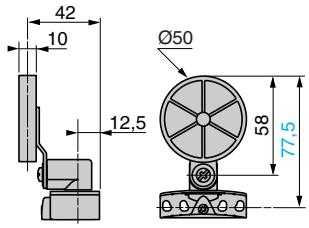
ZCEH2



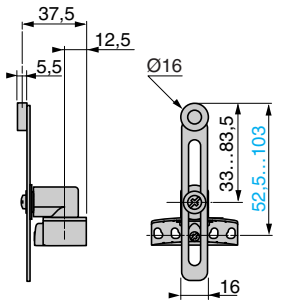
ZCE01 + ZCY18



ZCE01 + ZCY39

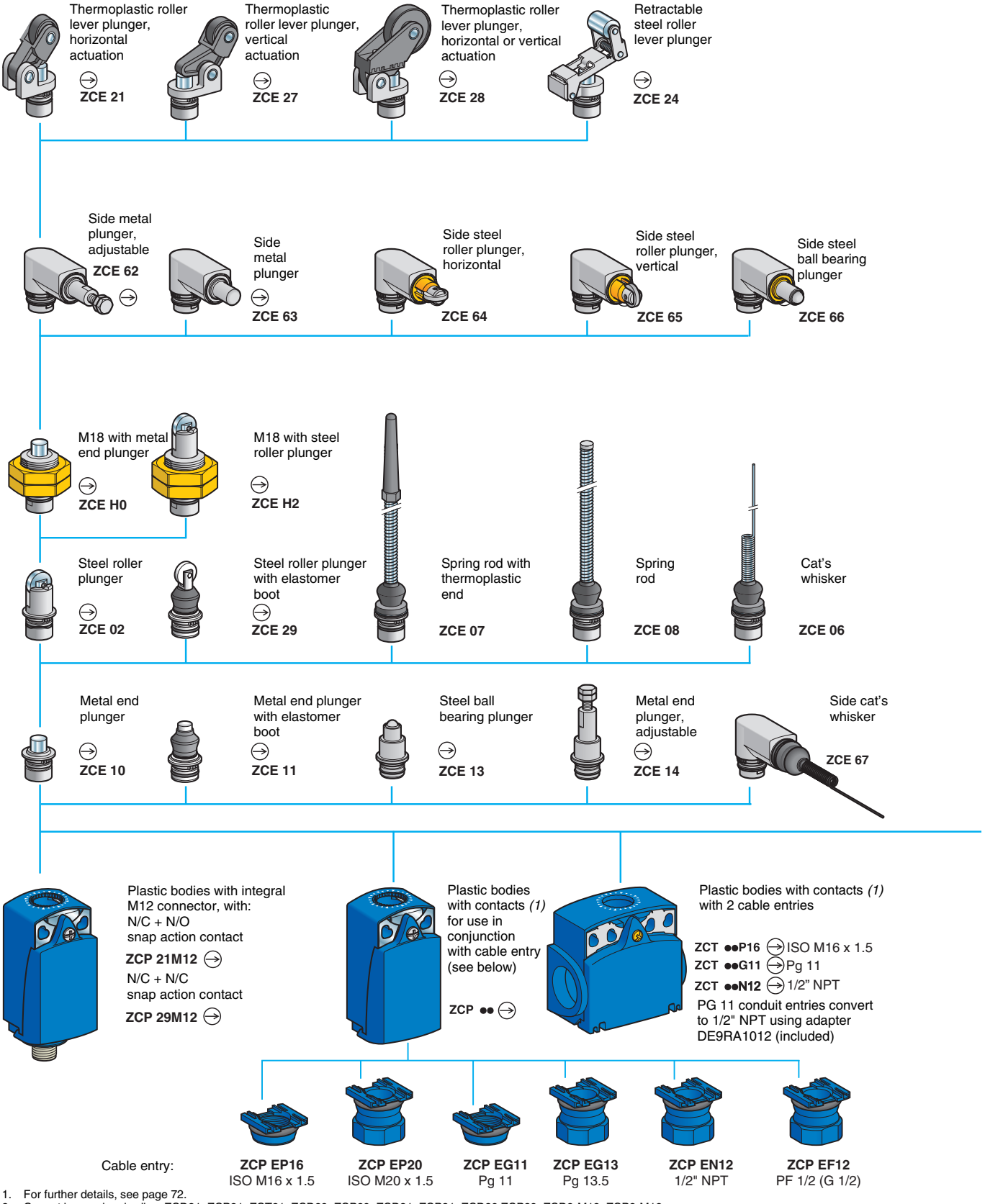


ZCE01 + ZCY45

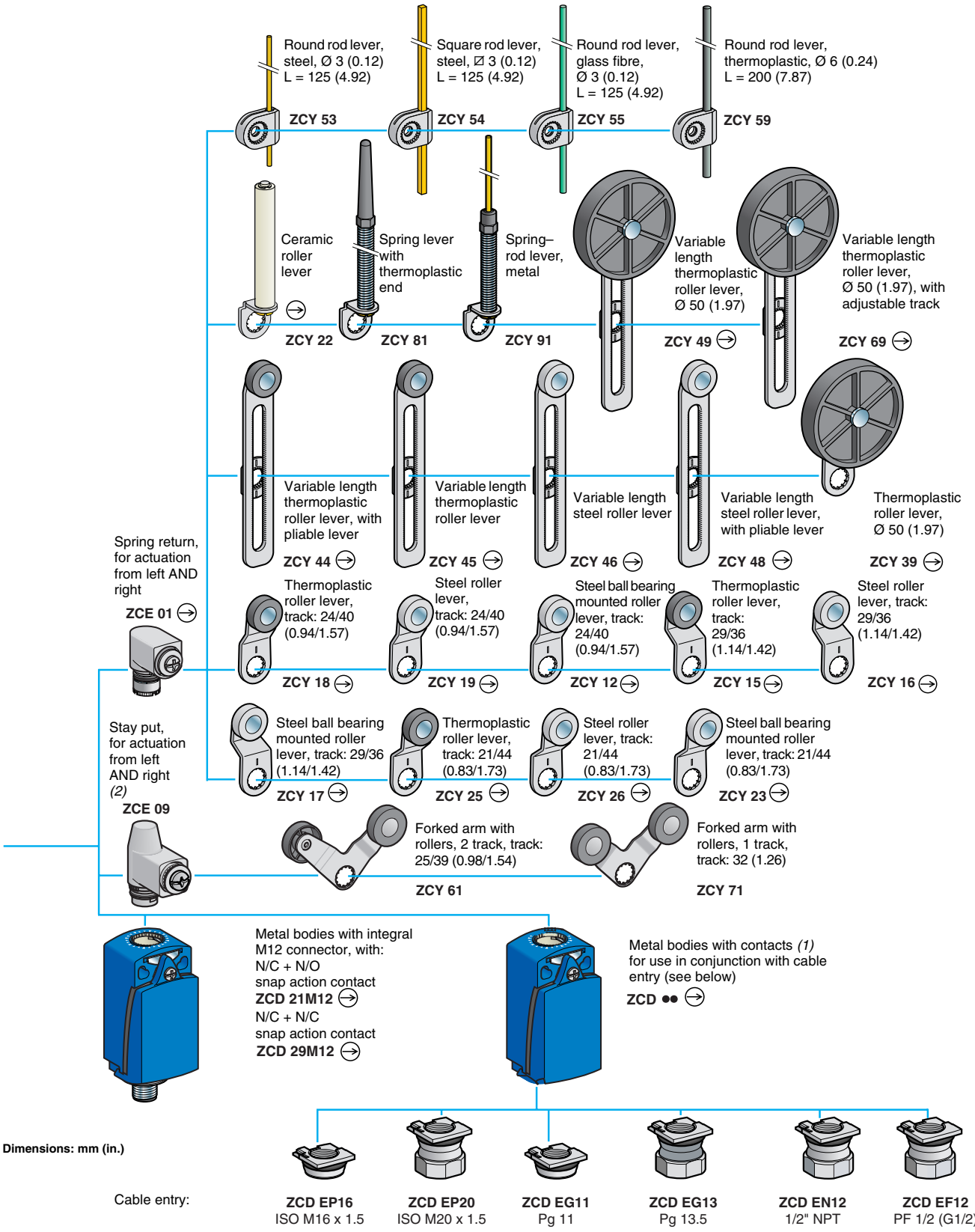


4. Mounting nut thickness 3.5 mm (0.14 in.)

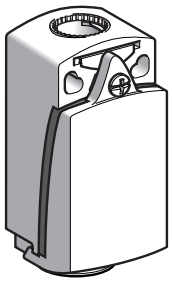
Limit Switches
Osiswitch® Compact, Metal and Plastic
Universal, XCKD, XCKP, and XCKT—Modular



1. For further details, see page 72.
2. Cannot be used on bodies: ZCD21, ZCP21, ZCT21, ZCD29, ZCP29, ZCD31, ZCP31, ZCD39.ZCP39, ZCD2•M12, ZCP2•M12.

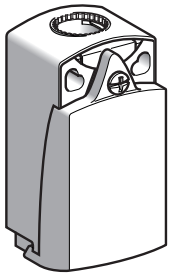


520710



ZCD••

520711



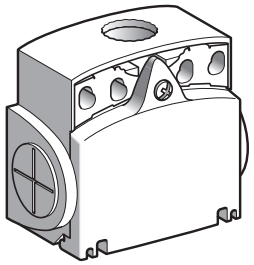
ZCP••

Bodies with contacts, types XCKD and XCKP *(1)*

Type of contact	Positive operation *(2)*	Function diagram	Body material	Catalog Number	Weight kg (lb)
2-pole					
N/C + N/O snap action (XE2SP2151)	⊖	13 21 / 14 22	Metal	**ZCD21**	0.140 (0.309)
			Plastic	**ZCP21**	0.070 (0.154)
N/C + N/C snap action (XE2SP2141)	⊖	11 21 / 12 22	Metal	**ZCD29**	0.140 (0.309)
			Plastic	**ZCP29**	0.070 (0.154)
N/C + N/O break before make, slow break (XE2NP2151)	⊖	13 21 / 14 22	Metal	**ZCD25**	0.140 (0.309)
			Plastic	**ZCP25**	0.070 (0.154)
N/O + N/C make before break, slow break (XE2NP2161)	⊖	13 21 / 14 22	Metal	**ZCD26**	0.140 (0.309)
			Plastic	**ZCP26**	0.070 (0.154)
N/C + N/C simultaneous, slow break (XE2NP2141)	⊖	11 21 / 12 22	Metal	**ZCD27**	0.140 (0.309)
			Plastic	**ZCP27**	0.070 (0.154)
N/O + N/O simultaneous, slow break (XE2NP2131)	—	13 23 / 14 24	Metal	**ZCD28**	0.140 (0.309)
			Plastic	**ZCP28**	0.070 (0.154)
3-pole					
N/C + N/O + N/O snap action (XE3SP2151)	⊖	21 33 13 / 22 34 14	Metal	**ZCD31**	0.140 (0.309)
			Plastic	**ZCP31**	0.070 (0.154)
N/C + N/C + N/O snap action (XE3SP2141)	⊖	31 21 13 / 32 22 14	Metal	**ZCD39**	0.140 (0.309)
			Plastic	**ZCP39**	0.070 (0.154)
N/C + N/C + N/O break before make, slow break (XE3NP2141)	⊖	31 21 13 / 32 22 14	Metal	**ZCD37**	0.140 (0.309)
			Plastic	**ZCP37**	0.070 (0.154)
N/C + N/O + N/O break before make, slow break (XE3NP2151)	⊖	21 33 13 / 22 34 14	Metal	**ZCD35**	0.140 (0.309)
			Plastic	**ZCP35**	0.070 (0.154)

1. Bodies with gold contacts or eyelet type connections: please consult your local sales office.
2. ⊖ : bodies with contacts assuring positive opening operation, when properly mounted and using a conforming operator.

561390

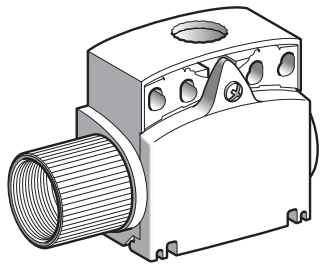


ZCT•••

Bodies with contacts, type XCKT plastic, 2 cable entries

Type of contact	Positive operation *(1)*	Function diagram	Cable entries	Catalog Number	Weight kg (lb)
2-pole					
N/C + N/O snap action (XE2SP3151)	⊖	13 21 / 14 22	ISO M16 x 1.5	**ZCT21P16**	0.085 (0.187)
			PG 11	**ZCT21G11**	0.085 (0.187)
N/C + N/O break before make, slow break (XE2NP3151)	⊖	13 21 / 14 22	ISO M16 x 1.5	**ZCT25P16**	0.085 (0.187)
			PG 11	**ZCT25G11**	0.085 (0.187)
N/C + N/C simultaneous, slow break (XE2NP3141)	⊖	11 21 / 12 22	ISO M16 x 1.5	**ZCT27P16**	0.085 (0.187)
			PG 11	**ZCT27G11**	0.085 (0.187)
N/O + N/O simultaneous, slow break (XE2NP3131)	—	13 23 / 14 24	ISO M16 x 1.5	**ZCT28P16**	0.085 (0.187)
			PG 11	**ZCT28G11**	0.085 (0.187)
N/O + N/C make before break, slow break (XE2NP3161)	⊖	13 21 / 14 22	ISO M16 x 1.5	**ZCT26P16**	0.085 (0.187)
			PG 11	**ZCT26G11**	0.085 (0.187)

561387

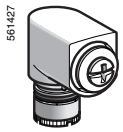


ZCT••N12

Bodies with contacts, type XCKT, plastic, 2 cable entries with 1/2" NPT adapter

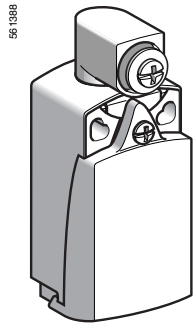
Type of contact	Positive operation *(1)*	Function diagram	Catalog Number	Weight kg (lb)
2-pole				
N/C + N/O snap action (XE2SP3151)	⊖	13 21 / 14 22	**ZCT21N12**	0.130 (0.287)
N/C + N/O break before make, slow break (XE2NP3151)	⊖	13 21 / 14 22	**ZCT25N12**	0.130 (0.287)
N/C + N/C simultaneous, slow break (XE2N P3141)	⊖	11 21 / 12 22	**ZCT27N12**	0.130 (0.287)
N/O + N/O simultaneous, slow break (XE2NP3131)	—	13 23 / 14 24	**ZCT28N12**	0.130 (0.287)
N/O + N/C make before break, slow break (XE2NP3161)	⊖	13 21 / 14 22	**ZCT26N12**	0.130 (0.287)

1. ⊖: bodies with contact assuring positive opening operation, when properly mounted and using a conforming operator.



ZCE05

DE9RA1012



XCK•2•01••

Accessories

Description	Suitable levers for use with head	Unit catalog number	Weight kg (oz)
Rotary head, without lever, spring return, for actuation from left AND right or left OR right *(1)*	ZCY12, ZCY15, ZCY16, ZCY17, ZCY18, ZCY19, ZCY22, ZCY23, ZCY25, ZCY26, ZCY39, ZCY53, ZCY54, ZCY55, ZCY81	**ZCE05**	0.045 (1.59)
Tap-off terminal (for XCKT)	Sold in lots of 10	**XALZ09**	0.010 (0.35)
Spacer for angular positioning of heads with adjustable levers, for values other than -90°, 0° and 90°	—	**XCMZ07**	0.002 (0.07)
Adapter for 1/2" NPT conduit Converts PG 11 conduit entries to 1/2" NPT	Sold in lots of 10	**DE9RA1012**	0.050 (1.76)

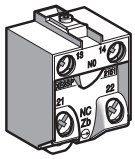
Bodies with contacts, type XCKP plastic, with rotary head (without operating lever)

Type of contact	Function diagram	Positive operation *(2)*	Cable entry	Catalog Number	Weight kg (lb)
2-pole					
N/C + N/O snap action (XE2SP2151)	13 21 / 14 22	⊖	1/2" NPT	**XCKP2101N12**	0.115 (0.254)
		⊖	PG 11	**XCKP2101G11**	0.115 (0.254)
		⊖	M12 connector	**XCKP2101M12**	0.125 (0.276)
N/C + N/O break before make, slow break (XE2NP2151)	13 21 / 14 22	⊖	1/2" NPT	**XCKP2501N12**	0.115 (0.254)
		⊖	PG 11	**XCKP2501G11**	0.115 (0.254)

Bodies with contacts, type XCKD metal, with rotary head (without operating lever)

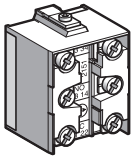
Type of contact	Function diagram	Positive operation *(2)*	Cable entry	Catalog Number	Weight kg (lb)
2-pole					
N/C + N/O snap action (XE2SP2151)	13 21 / 14 22	⊖	1/2" NPT	**XCKD2101N12**	0.185 (0.408)
		⊖	PG 11	**XCKD2101G11**	0.185 (0.408)
		⊖	M12 connector	**XCKD2101M12**	0.195 (0.430)
N/C + N/O break before make, slow break (XE2NP2151)	13 21 / 14 22	⊖	1/2" NPT	**XCKD2501N12**	0.185 (0.408)
		⊖	PG 11	**XCKD2501G11**	0.185 (0.408)

561393



XE2••21••

561394



XE3••21••

Contact blocks with screw clamp terminals for XCKD and XCKP

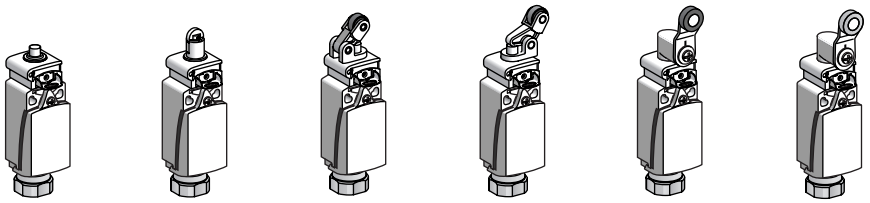
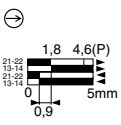
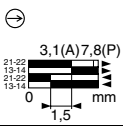
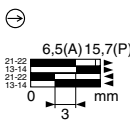
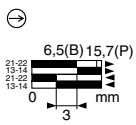
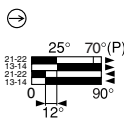
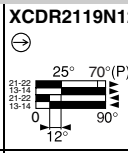
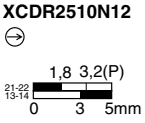
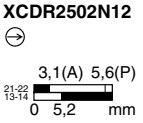
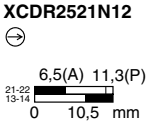
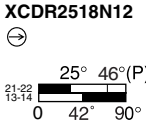
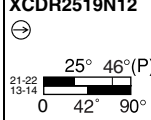
Type of contact	Positive operation *(1)*	Function diagram	Catalog number for standard contacts	Weight kg (lb)
2-pole				
N/C + N/O snap action	⊖	13 21 / 14 22	**XE2SP2151**	0.020 (0.044)
N/C + N/C simultaneous, snap action	⊖	11 21 / 12 22	**XE2SP2141**	0.020 (0.044)
N/C + N/O break before make, slow break	⊖	13 21 / 14 22	**XE2NP2151**	0.020 (0.044)
N/O + N/C make before break, slow break	⊖	13 21 / 14 22	**XE2NP2161**	0.020 (0.044)
N/C + N/C simultaneous, slow break	⊖	11 21 / 12 22	**XE2NP2141**	0.020 (0.044)
N/O + N/O simultaneous, slow break	—	13 23 / 14 24	**XE2NP2131**	0.020 (0.044)
3-pole				
N/C + N/O + N/O snap action	⊖	21 33 13 / 22 34 14	**XE3SP2151**	0.035 (0.077)
N/C + N/C + N/O snap action	⊖	31 21 13 / 32 22 14	**XE3SP2141**	0.035 (0.077)
N/C + N/C + N/O break before make, slow break	⊖	31 21 13 / 32 22 14	**XE3NP2141**	0.035 (0.077)
N/C + N/O + N/O break before make, slow break	⊖	21 33 13 / 22 34 14	**XE3NP2151**	0.035 (0.077)

Contact blocks with screw clamp terminals for XCKT

Type of contact	Positive operation *(1)*	Function diagram	Catalog number for standard contacts	Weight kg (lb)
2-pole				
N/C + N/O snap action	⊖	13 21 / 14 22	**XE2SP3151**	0.015 (0.033)
N/C + N/O break before make, slow break	⊖	13 21 / 14 22	**XE2NP3151**	0.015 (0.033)
N/O + N/C make before break, slow break	⊖	13 21 / 14 22	**XE2NP3161**	0.015 (0.033)
N/C + N/C simultaneous, slow break	⊖	11 21 / 12 22	**XE2NP3141**	0.015 (0.033)
N/O + N/O simultaneous, slow break	—	13 23 / 14 24	**XE2NP3131**	0.015 (0.033)

1. ⊖: contact blocks assuring positive opening operation, when properly mounted and using a conforming operator.

Limit Switches
Osiswitch® Compact with Manual Reset
Application, XCDR—Complete Switches, Metal, with One Cable Entry, 1/2" NPT

Type of head	Plunger (mounting by the body)				Rotary (mounting by the body)	
						
Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever plunger, vertical actuation in 1 direction	Thermoplastic roller lever	Steel roller lever
Catalog numbers of complete switches with one 1/2" NPT cable entry						
 **2-pole N/C + N/O snap action (XE2SP2151)**	**XCDR2110N12** 	**XCDR2102N12** 	**XCDR2121N12** 	**XCDR2127N12** 	**XCDR2118N12** 	**XCDR2119N12** 
 **2-pole N/C + N/O break before make, slow break (XE2NP2151)**	**XCDR2510N12** 	**XCDR2502N12** 	**XCDR2521N12** 	**XCDR2527N12** 	**XCDR2518N12** 	**XCDR2519N12** 
Weight, kg (lb)	0.215 (0.474)	0.220 (0.485)	0.225 (0.496)	0.225 (0.496)	0.255 (0.562)	0.255 (0.562)

Catalog numbers of complete switches with one PG 13.5 cable entry

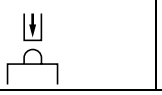
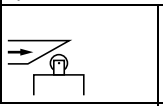
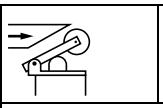
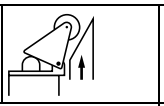
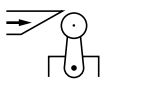
For complete switches with 1 PG 13.5 cable entry, replace N12 with **G13**.
Example: XCDR 2110P20 becomes **XCDR 2110G13**.

Catalog numbers of complete switches with one P20 cable entry

For complete switches with 1 ISO M20 x 1.5 cable entry, replace N12 with **P20**.
Example: XCDR 2110N12 becomes **XCDR 2110P20**.

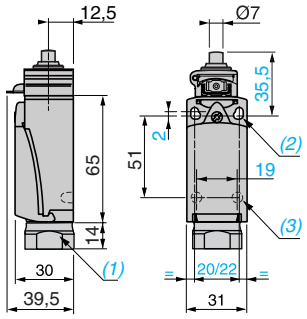
Contact operation	■ contact closed □ contact open	*(A) (B)* = cam displacement *(P)* = positive opening point	⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator

Characteristics

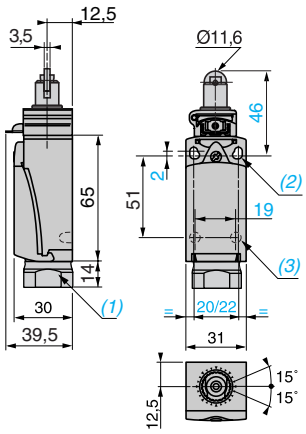
Switch actuation		On end	By 30° cam			
Type of actuation						
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1 m/s (3.28 ft/s)		1.5 m/s (4.92 ft/s)
Minimum force or torque	For tripping	15 N (3.37 lb)	12 N (2.70 lb)	6 N (1.35 lb)		0.1 N•m (0.89 lb-in)
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	18 N (4.05 lb)		0.25 N•m (2.21 lb-in)
Cable entry		1 entry tapped M20 x 1.5 mm for ISO cable entry, clamping capacity 7 to 13 mm (0.28 to 0.51 in.), or 1 entry tapped PG 13.5, clamping capacity 9 to 12 mm (0.35 to 0.47 in.), or 1 entry tapped for 1/2" NPT (USAS B2-1) conduit				

Dimensions

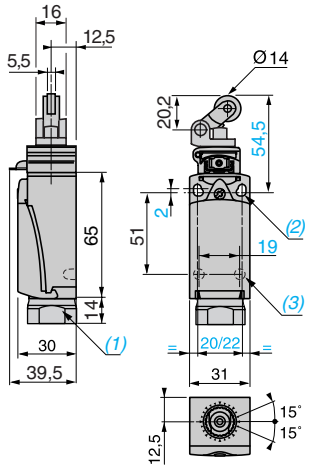
XCDR2•10•••



XCDR2•02•••



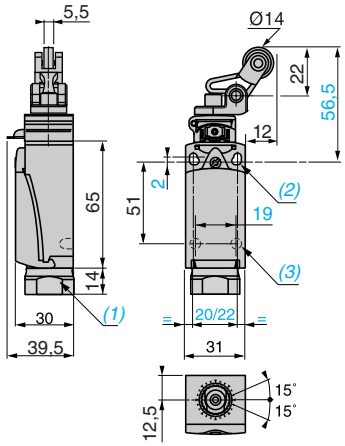
XCDR2•21•••



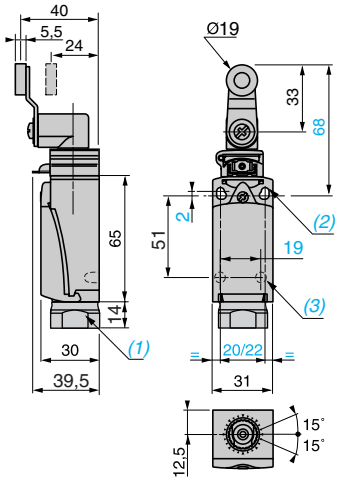
1. Tapped entry for ISO M20 x 1.5 or PG 13.5 conduit thread or 1/2" NPT conduit
2. 2 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22 mm (0.87 in.) centers, 2 holes Ø 4.3 mm (0.17 in.) on 20 mm (0.79 in.) centers
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.)

Dimensions

XCDR2•27•••

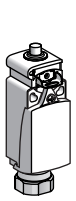
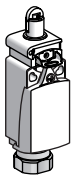
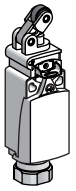
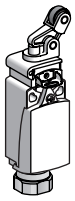
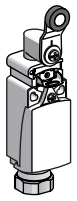
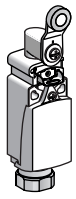
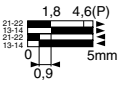
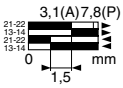
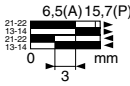
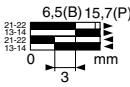
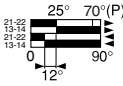
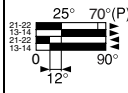
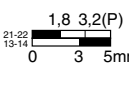
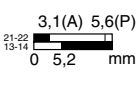
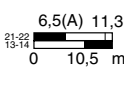
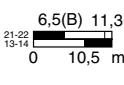
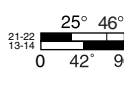
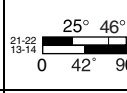
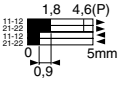
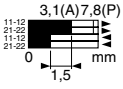
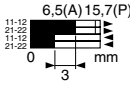
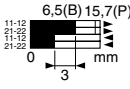
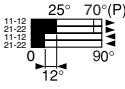


XCDR2•18•••, XCDR2•19•••



1. Tapped entry for ISO M20 x 1.5 or PG 13.5 conduit thread or 1/2" NPT conduit.
2. 2 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22 mm (0.87 in.) centers, 2 holes Ø 4.3 mm (0.17 in.) on 20 mm (0.79 in.) centers.
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).

Limit Switches
Osiswitch® Compact with Manual Reset
Application, XCPR—Complete Switches, Plastic, with One Cable Entry, 1/2" NPT

Type of head	Plunger (mounting by the body)				Rotary (mounting by the body)	
						
Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever plunger, vertical actuation in 1 direction	Thermoplastic roller lever	Steel roller lever
Catalog numbers of complete switches with one 1/2" NPT cable entry						
 **2-pole N/C + N/O snap action (XE2SP2151)**	**XCPR2110N12** 	**XCPR2102N12** 	**XCPR2121N12** 	**XCPR2127N12** 	**XCPR2118N12** 	**XCPR2119N12** 
 **2-pole N/C + N/O break before make, slow break (XE2NP2151)**	**XCPR2510N12** 	**XCPR2502N12** 	**XCPR2521N12** 	**XCPR2527N12** 	**XCPR2518N12** 	**XCPR2519N12** 
 **2-pole N/C + N/C snap action (XE2S P2141)**	**XCPR2910N12** 	**XCPR2902N12** 	**XCPR2921N12** 	**XCPR2927N12** 	**XCPR2918N12** 	—
Weight, kg (lb)	0.115 (0.254)	0.115 (0.254)	0.125 (0.276)	0.120 (0.265)	0.155 (0.342)	—

Catalog numbers of complete switches with one PG 13.5 cable entry

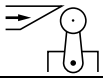
For complete switches with one PG 13.5 cable entry, replace N12 with **G13**.
Example: XCPR 2110P20 becomes **XCPR 2110G13**.

Catalog numbers of complete switches with one P20 cable entry

For complete switches with one ISO M20 x 1.5 cable entry, replace N12 with **P20**.
Example: XCPR 2110N12 becomes **XCPR 2110P20**.

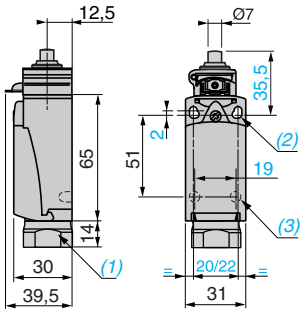
Contact operation	■ contact closed □ contact open	*(A) (B)* = cam displacement *(P)* = positive opening point	⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator

Characteristics

Switch actuation		On end	By 30° cam			
Type of actuation						
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1 m/s (3.28 ft/s)		1.5 m/s (4.92 ft/s)
Minimum force or torque	For tripping	15 N (3.37 lb)	12 N (2.70 lb)	6 N (1.35 lb)		0.1 N•m (0.89 lb-in)
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	18 N (4.05 lb)		0.25 N•m (2.21 lb-in)
Cable entry		1 entry tapped M20 x 1.5 mm for ISO cable entry, clamping capacity 7 to 13 mm (0.28 to 0.51 in.), or 1 entry tapped PG 13.5, clamping capacity 9 to 12 mm (0.35 to 0.47 in.), or 1 entry tapped for 1/2" NPT (USAS B2-1) conduit				
Other versions		Complete switches with cable entries other than those listed above. Consult your local sales office.				

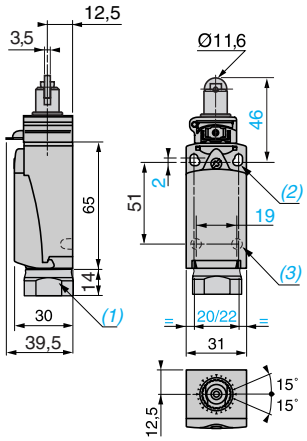
Dimensions

XCPR2•10•••

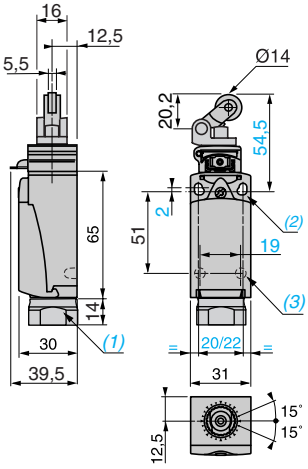


1. Tapped entry for ISO M20 x 1.5 or PG 13.5 conduit thread or 1/2" NPT conduit.
2. 2 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22 mm (0.87 in.) centers, 2 holes Ø 4.3 mm (0.17 in.) on 20 mm (0.79 in.) centers.
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).

XCPR2•02•••

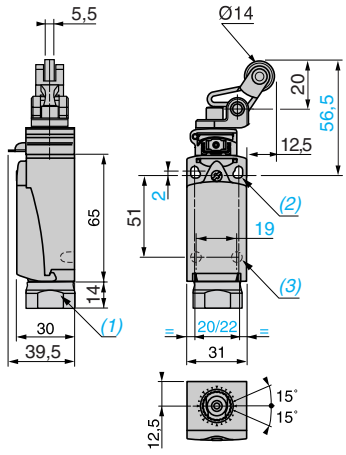


XCPR2•21•••

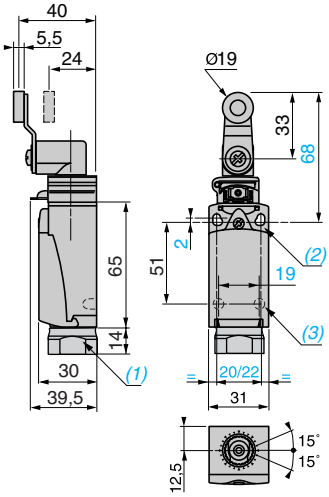


Dimensions

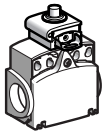
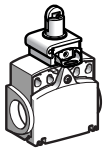
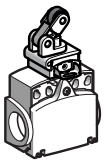
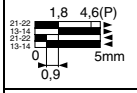
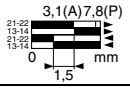
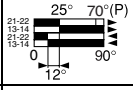
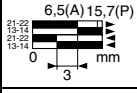
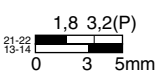
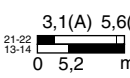
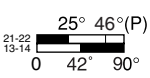
XCPR2•27•••



XCPR2•18•••, XCPR2•19•••



1. Tapped entry for ISO M20 x 1.5 or PG 13.5 conduit thread or 1/2" NPT conduit.
2. 2 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22 mm (0.87 in.) centers, 2 holes Ø 4.3 mm (0.17 in.) on 20 mm (0.79 in.) centers.
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).

Type of head	Plunger (mounting by the body)			
				
Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction
Catalog numbers of complete switches with two cable entries, 1/2" NPT *(1)*				
 **2-pole N/C + N/O snap action (XE2SP3151)**	**XCTR2110N12** ⊖ 	**XCTR2102N12** ⊖ 	**XCTR2118N12** ⊖ 	**XCTR2121N12** ⊖ 
 **2-pole N/C + N/O break before make, slow break (XE2NP3151)**	**XCTR2510N12** ⊖ 	**XCTR2502N12** ⊖ 	**XCTR2518N12** ⊖ 	**XCTR2521N12** ⊖ 
Weight, kg (lb)	0.120 (0.265)	0.125 (0.276)	0.165 (0.364)	0.135 (0.298)

1. One PG 11 to 1/2" NPT adapter and one plug included.

Catalog numbers of complete switches with two PG 11 cable entries

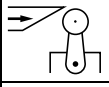
For complete switches with two PG 11 cable entries, replace N12 with **G11**.
Example: XCTR 2110N12 becomes **XCTR 2110G11**.

Catalog numbers of complete switches with two ISO M16 x 1.5 cable entries

For complete switches with two ISO M16 x 1.5 cable entries, replace N12 with **P16**.
Example: XCTR 2110N12 becomes **XCTR 2110P16**.

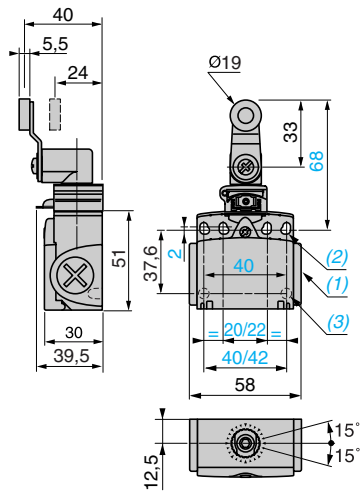
Weight, kg (lb)	0.120 (0.265)	0.125 (0.276)	0.165 (0.364)	0.135 (0.298)
Contact operation	■ contact closed □ contact open	(A) = cam displacement (P) = positive opening point	⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

Characteristics

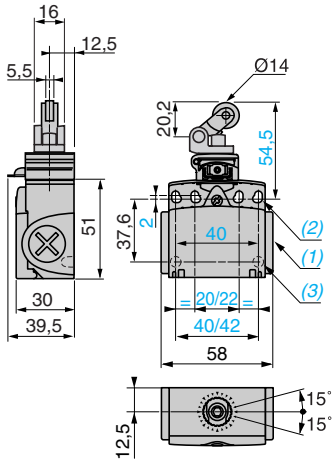
Switch actuation		On end	By 30° cam		
Type of actuation					
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)	1 m/s (3.28 ft/s)
Minimum force or torque	For tripping	15 N (3.37 lb)	12 N (2.70 lb)	0.1 N•m (0.89 lb-in)	6 N (1.35 lb)
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	0.25 N•m (2.21 lb-in)	18 N (4.05 lb)
Cable entry (1 entry fitted with blanking plug)		2 entries tapped M16 x 1.5 mm for ISO cable entry, clamping capacity 4 to 8 mm (0.16 to 0.31 in.), or 2 entries tapped PG 11, clamping capacity 7 to 10 mm (0.28 to 0.39 in.), or 2 entries tapped for 1/2" NPT (USAS B2-1) conduit using PG 11 to 1/2" NPT adapter DE9RA1012 (1 entry fitted with adapter)			

Dimensions

XCTR 2•18•••

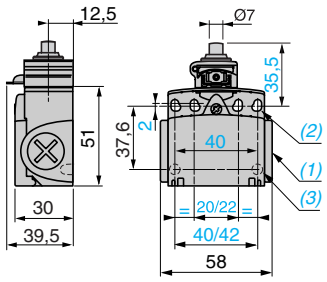


XCTR 2•21•••

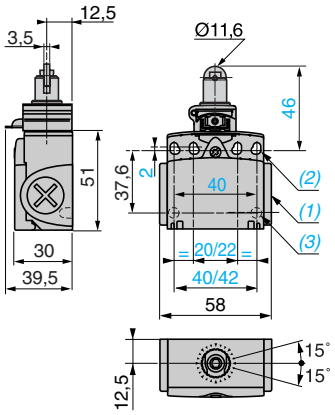


1. Tapped entry for ISO M16 x 1.5 or PG 11 conduit thread. 1/2" NPT adapter included.
2. 4 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22/42 mm (0.87/1.65 in.) centers, 4 holes Ø 4.3 mm (0.17 in.) on 20/40 mm (0.79/1.57 in.) centers.
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).

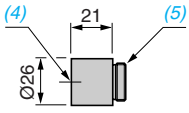
XCTR 2•10•••



XCTR 2•02•••



DE9RA1012

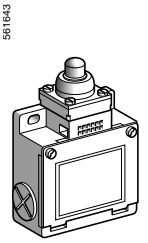


1. Tapped entry for ISO M16 x 1.5 or PG 11 conduit thread. 1/2" NPT adapter included.
2. 4 elongated holes Ø 4.3 x 6.3 mm (0.17 x 0.25 in.) on 22/42 mm (0.87/1.65 in.) centers, 4 holes Ø 4.3 mm (0.17 in.) on 20/40 mm (0.79/1.57 in.) centers.
3. 2 x Ø 3 holes for support studs, depth 4 mm (0.16 in.).
4. Tapped entry for 1/2" NPT conduit.
5. PG 11 threaded sleeve.

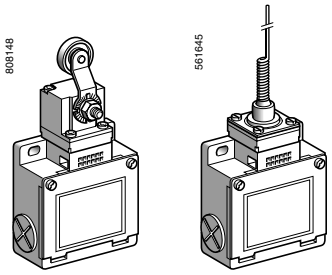
Limit Switches
Osiswitch® Classic, Metal
XCKM, XCKL, and XCKML

■ XCKM
with 3 cable entries

□ With plunger head



□ With rotary or multi-directional head



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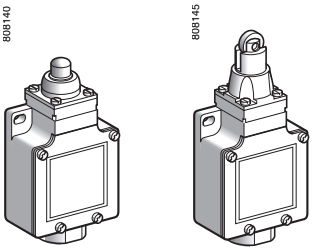
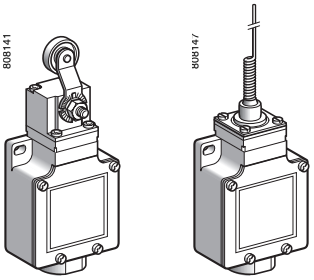
■ XCKL
with 1 cable entry

□ With plunger head



□ With rotary or multi-directional head



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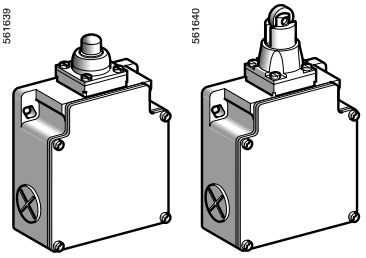
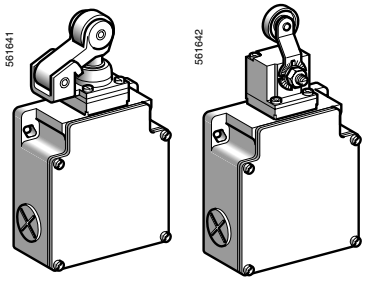
■ XCKML
with 3 cable entries and two 2-pole contacts

□ With plunger head



□ With rotary or multi-directional head



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Environmental characteristics

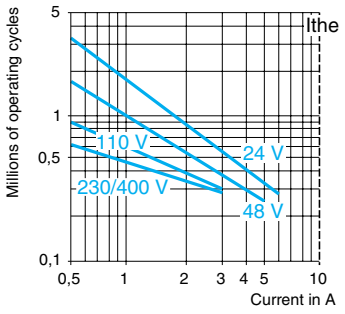
Conforming to standards	Products	IEC 60947-5-1, EN 60947-5-1, UL 508, CSA C22-2 n° 14
	Machine assemblies	IEC 60204-1, EN 60204-1
Product certifications		UL, CSA, CCC (for XCKM)
Protective treatment	Version	Standard "TC". Special "TH"
Ambient air temperature	For operation	- 25…+70 °C (-13…+158 °F)
	For storage	- 40…+70 °C (-40…+158 °F)
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		**XCKML** 0.1 mm; **XCKM** and **XCKL** 0.05 mm on the tripping points, with 1 million operating cycles for head with end plunger
Cable entry or integral connector	Depending on model	**XCKM**: 3 tapped entries, PG 11 conduit thread (1/2" NPT adapter available), or tapped M20 **XCKL**: 1 tapped entry incorporating 1/2" NPT adapter **XCKML**: 3 tapped entries, PG 13 conduit thread (1/2" NPT adapter included), or tapped M20
Materials		Bodies: Zamak® zinc alloy Rotary heads: Zamak® zinc alloy or plastic depending on model; other heads: plastic

Contact block characteristics

Rated operational characteristics	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
Rated insulation voltage	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
Rated impulse withstand voltage	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
Positive operation (depending on model)		N/C contacts with positive opening operation conforming to IEC 947-5-1 Section 3, EN 60 947-5-1
Resistance across terminals		⩽ 25 mΩ conforming to IEC 60255-7 category 3
Short-circuit protection	XE2•P	10 A cartridge fuse type gG (gl)
	XE3•P	6 A cartridge fuse type gG (gl)
Cabling (screw and captive cable clamp terminals)	XE2SP21•1	Clamping capacity, min: 1 x 0,34 mm^2, max: 2 x 1,5 mm^2
	XE2NP21•1	Clamping capacity, min: 1 x 0,5 mm^2, max: 2 x 2,5 mm^2
	XESP2151L and XENP2151L	Clamping capacity, min: 1 x 0,34 mm^2, max: 2 x 1,5 mm^2 or 1 x 2,5 mm^2
	XE3NP et XE3SP	Clamping capacity, min: 1 x 0,34 mm^2, max: 1 x 1 mm^2 or 2 x 0,75 mm^2
Minimum actuation speed		**XE2SP21•1, XESP2151L** and **XE3SP:** 0.01 m/minute (0.03 ft/minute)
		XE2NP21•1, XENP2151L and **XE3NP**: 6 m/minute (19.68 ft/minute)
Electrical durability		• Conforming to IEC 60947-5-1 appendix C • Utilization categories AC-15 and DC-13 • Maximum operating rate: 3600 operating cycles/hour • Load factor: 0,5

XE2SP21•1, XE2SP2141, XESP2151L

a.c. supply
~ 50/60 Hz
inductive circuit

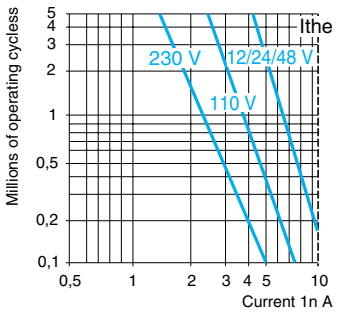


d.c. supply ⎓

Power switched in W for 5 million operating cycles

Voltage	V	24	48	120
inductive	W	10	7	4

XE2NP21•1, XENP2151L



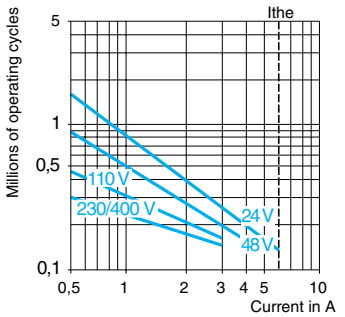
Power switched in W for 5 million operating cycles

Voltage	V	24	48	120
inductive	W	13	9	7

For XE2SP•151 on ~ or ⎓, the "N/C" and "N/O" contacts are simultaneously loaded to the values shown with reverse polarity.

XE3SP••••

a.c. supply
~ 50/60 Hz
inductive circuit

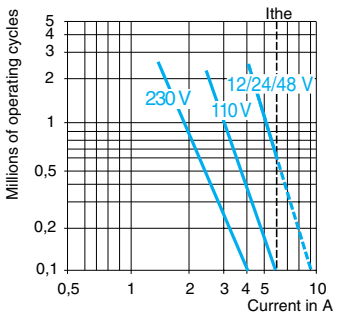


d.c. supply ⎓

Power switched in W for 5 million operating cycles

Voltage	V	24	48	120
inductive	W	3	2	1

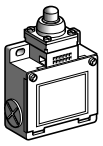
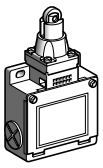
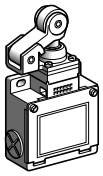
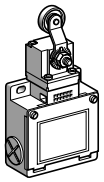
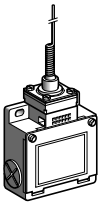
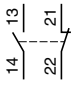
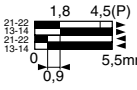
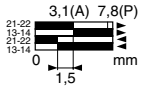
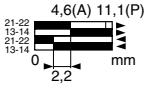
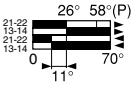
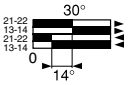
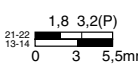
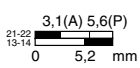
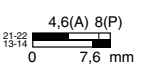
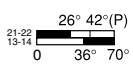
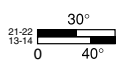
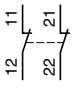
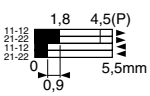
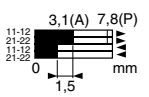
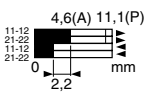
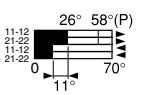
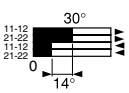
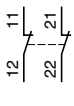
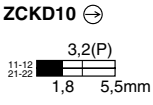
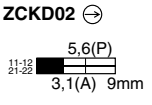
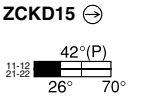
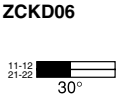
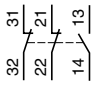
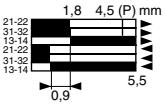
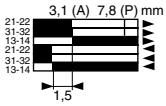
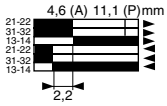
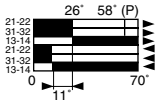
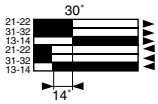
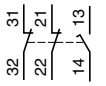
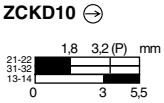
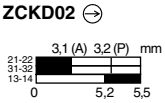
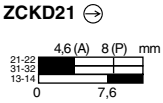
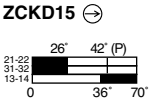
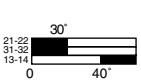
XE3NP••••



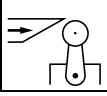
Power switched in W for 5 million operating cycles

Voltage	V	24	48	120
inductive	W	4	3	2

Limit Switches
Osiswitch® Classic, Metal
XCKM—Complete Switches w/ 3 ISO M20x1.5 Cable Entries, Including One 1/2" NPT Adapter

Type of head	Plunger (mounting by the body)			Rotary (mounting by the body)	Multi-directional (mounting 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)*	Cat's whisker *(4)*
Catalog numbers *(2) (3)*					
2-pole N/C + N/O snap action (XE2SP2151)		**XCKM110H29** ⊖ 	**XCKM102H29** ⊖ 	**XCKM121H29** ⊖ 	**XCKM115H29** ⊖ 	**XCKM106H29** 
2-pole N/C + N/O break before make, slow break (XE2NP2151)		**XCKM510H29** ⊖ 	**XCKM502H29** ⊖ 	**XCKM521H29** ⊖ 	**XCKM515H29** ⊖ 	**XCKM506H29** 
2-pole N/C + N/C snap action (XE2SP2141)		**ZCKM9H29 + ZCKD10** ⊖ 	**ZCKM9H29 + ZCKD02** ⊖ 	**ZCKM9H29 + ZCKD21** ⊖ 	**ZCKM9H29 + ZCKD15** ⊖ 	**ZCKM9H29 + ZCKD06** 
2-pole N/C + N/C simultaneous, slow break (XE2NP2141)		**ZCKM7H29 + ZCKD10** ⊖ 	**ZCKM7H29 + ZCKD02** ⊖ 	**ZCKM7H29 + ZCKD21** ⊖ 	**ZCKM7H29 + ZCKD15** ⊖ 	**ZCKM7H29 + ZCKD06** 
3-pole N/C + N/C + N/O snap action (XE3SP2141)		**ZCKMD39H29 + ZCKD10** ⊖ 	**ZCKMD39H29 + ZCKD02** ⊖ 	**ZCKMD39H29 + ZCKD21** ⊖ 	**ZCKMD39H29 + ZCKD15** ⊖ 	**ZCKMD39H29 + ZCKD06** 
3-pole N/C + N/C + N/O break before make, slow break (XE3NP2141)		**ZCKMD37H29 + ZCKD10** ⊖ 	**ZCKMD37H29 + ZCKD02** ⊖ 	**ZCKMD37H29 + ZCKD21** ⊖ 	**ZCKMD37H29 + ZCKD15** ⊖ 	**ZCKMD37H29 + ZCKD06** 
Weight, kg (lb)	0.250 (0.551)	0.255 (0.562)	0.300 (0.661)	0.280 (0.617)	0.250 (0.551)
Contact operation	■ contact closed □ contact open	(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

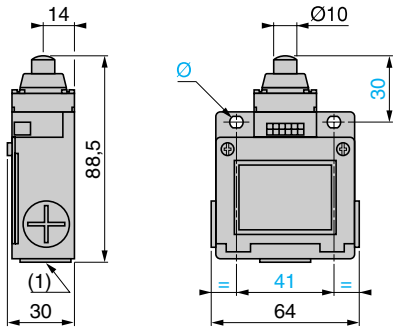
Characteristics

Switch actuation		On end	By 30° cam			By any moving part
Type of actuation						
Maximum actuation speed		0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)		1 m/s (3.28 ft/s), any direction
Minimum force or torque	For tripping	15 N (3.37 lb)	12 N (2.70 lb)	8 N (1.80 lb)	0.1 N•m (0.89 lb-in)	0.13 N•m (1.15 lb-in)
	For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	24 N (5.40 lb)	0.25 N•m (2.21 lb-in)	—
Cable entry *(3)*		3 entries tapped M20 x 1.5 mm for ISO cable entry, clamping capacity 7 to 13 mm (0.28 to 0.51 in.)				

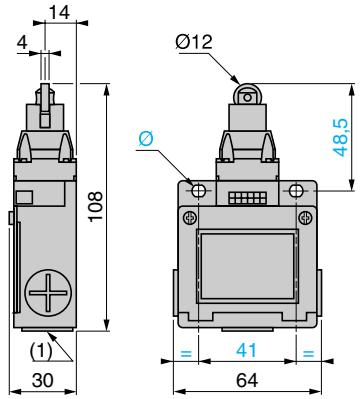
1. Adjustable throughout 360° in 5° steps, or in 90° steps by reversing the notched washer.
2. Switches with gold contacts or eyelet type connections: please consult your local sales office.
3. For an entry tapped for a PG 11 conduit thread, delete **H29** from the end of the catalog number. Example: **XCKM110H29** becomes **XCKM110**.
4. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mounting.

Note: To convert XCKM110 from PG 11 to 1/2" NPT, use adapter DE9RA1012, included.

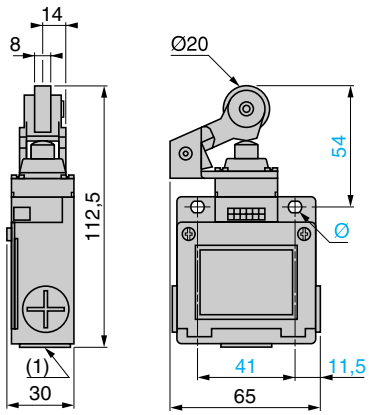
XCKM•10
ZCKMD3• + ZCKD10



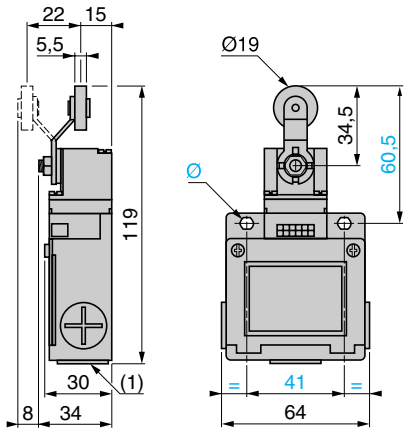
XCKM•02
ZCKMD3• + ZCKD02



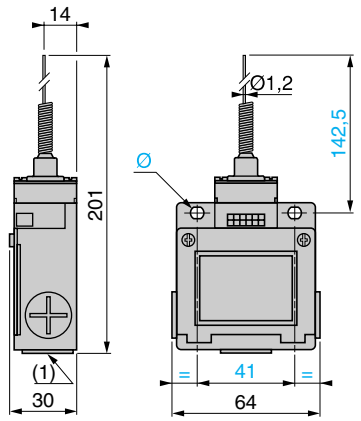
XCKM•21
ZCKMD3• + ZCKD21



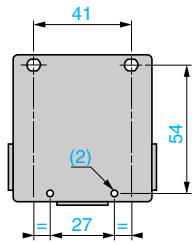
XCKM•15
ZCKMD3• + ZCKD15



XCKM•06
ZCKMD3• + ZCKD06



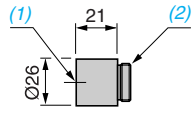
Rear view
XCKM•••, ZCKM•, ZCKMD3•



1. 3 tapped entries for ISO M20 x 1.5 or PG 11 conduit thread. Includes 1/2" NPT conduit adapter DE9RA1012.
2. 2 x Ø 4 H 11, depth 10.

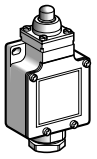
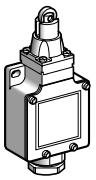
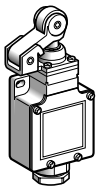
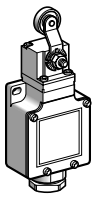
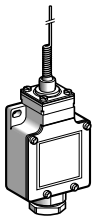
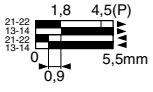
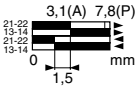
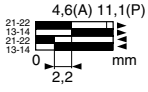
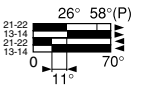
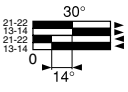
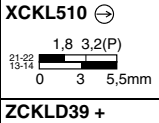
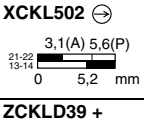
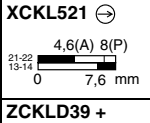
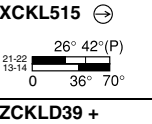
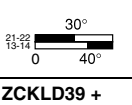
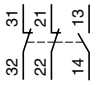
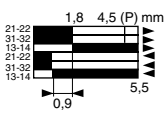
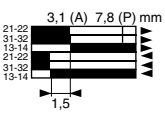
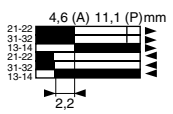
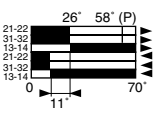
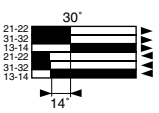
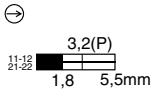
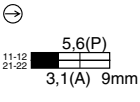
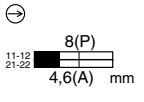
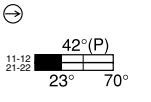
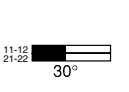
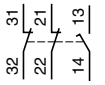
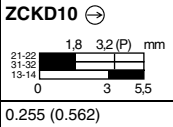
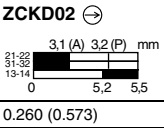
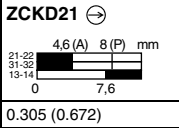
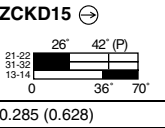
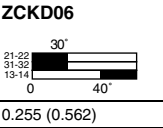
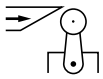
Ø: 2 elongated holes Ø 5.2 x 6.2.

Adapter for 1/2" NPT conduit
DE9RA1012



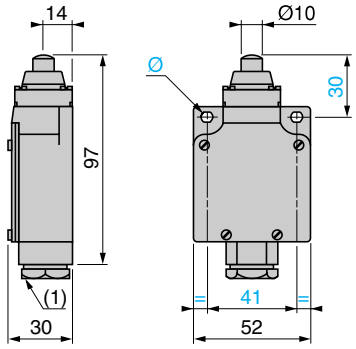
1. Tapped entry for 1/2" NPT conduit.
2. PG 11 threaded sleeve.

Limit Switches
Osiswitch® Classic, Metal
XCKL—Complete Switches Incorporating Adapter for 1/2" NPT

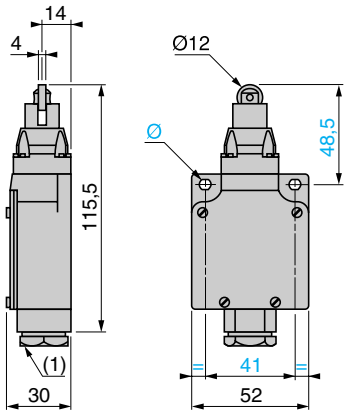
Type of head	Plunger (mounting by the body)			Rotary (mounting by the body)	Multi-directional (mounting by the body)
					
Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever *(1)*	Cat's whisker *(2)*
Catalog numbers *(3)*					
2-pole N/C + N/O snap action (XE2SP2151)		**XCKL110** 	**XCKL102** 	**XCKL121** 	**XCKL115** 	**XCKL106** 
2-pole N/C + N/O break before make, slow break (XE2NP2151)		**XCKL510** 	**XCKL502** 	**XCKL521** 	**XCKL515** 	**XCKL506** 
3-pole N/C + N/C + N/O snap action (XE3SP2141)		**ZCKLD39 + ZCKD10** 	**ZCKLD39 + ZCKD02** 	**ZCKLD39 + ZCKD21** 	**ZCKLD39 + ZCKD15** 	**ZCKLD39 + ZCKD06** 
2-pole N/C + N/C simultaneous, slow break (XE2NP2141)		**ZCKL7 + ZCKD10** 	**ZCKL7 + ZCKD02** 	**ZCKL7 + ZCKD21** 	**ZCKL7+ ZCKD15** 	**ZCKL7 + ZCKD06** 
3-pole N/C + N/C + N/O break before make, slow break (XE3NP2141)		**ZCKLD37 + ZCKD10** 	**ZCKLD37 + ZCKD02** 	**ZCKLD37 + ZCKD21** 	**ZCKLD37 + ZCKD15** 	**ZCKLD37 + ZCKD06** 
Weight, kg (lb)	0.255 (0.562)	0.260 (0.573)	0.305 (0.672)	0.285 (0.628)	0.255 (0.562)
Contact operation	■ contact closed □ contact open	(A) = cam displacement (P) = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	
Characteristics					
Switch actuation	On end	By 30° cam			By any moving part
Type of actuation					
Maximum actuation speed	0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)		1 m/s (3.28 ft/s), any direction
Minimum force or torque — For tripping	15 N (3.37 lb)	12 N (2.70 lb)	8 N (1.80 lb)	0.1 N•m (0.89 lb-in)	0.13 N•m (1.15 lb-in)
Minimum force or torque — For positive opening	45 N (10.12 lb)	36 N (8.09 lb)	24 N (5.40 lb)	0.25 N•m (2.21 lb-in)	—
Cable entry	1 entry incorporating metal cable entry. Clamping capacity 6 to 13.5 mm (0.24 to 0.53 in.).				

1. Adjustable throughout 360° in 5° steps, or in 90° steps by reversing the notched washer.
2. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mounting.
3. Switches with gold contacts or eyelet type connections: please consult your local sales office.

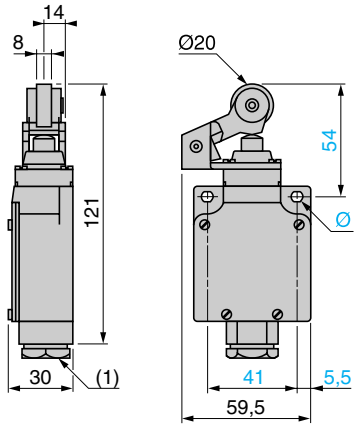
XCKL•10
ZCKL• + ZCKD10
ZCKLD3• + ZCKD10



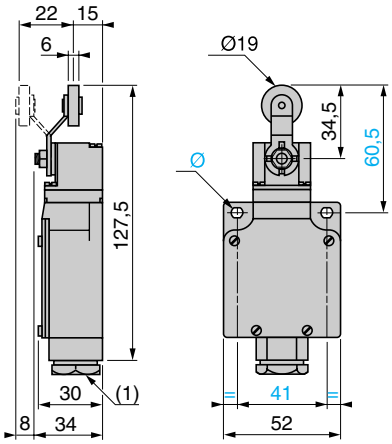
XCKL•02
ZCKL3• + ZCKD02
ZCKLD3• + ZCKD02



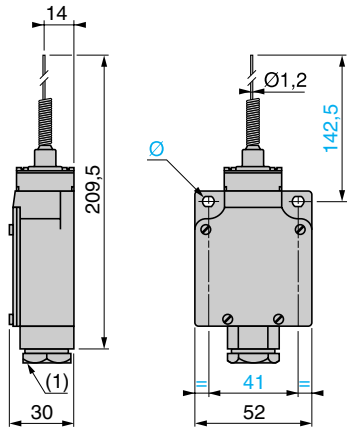
XCKL•21
ZCKL• + ZCKD21
ZCKLD3• + ZCKD21



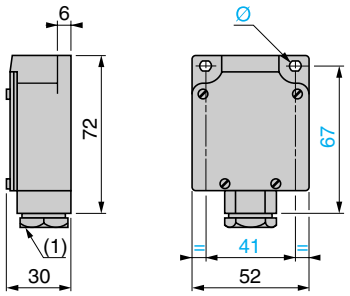
XCKL•15
ZCKL• + ZCKD15
ZCKLD3• + ZCKD15



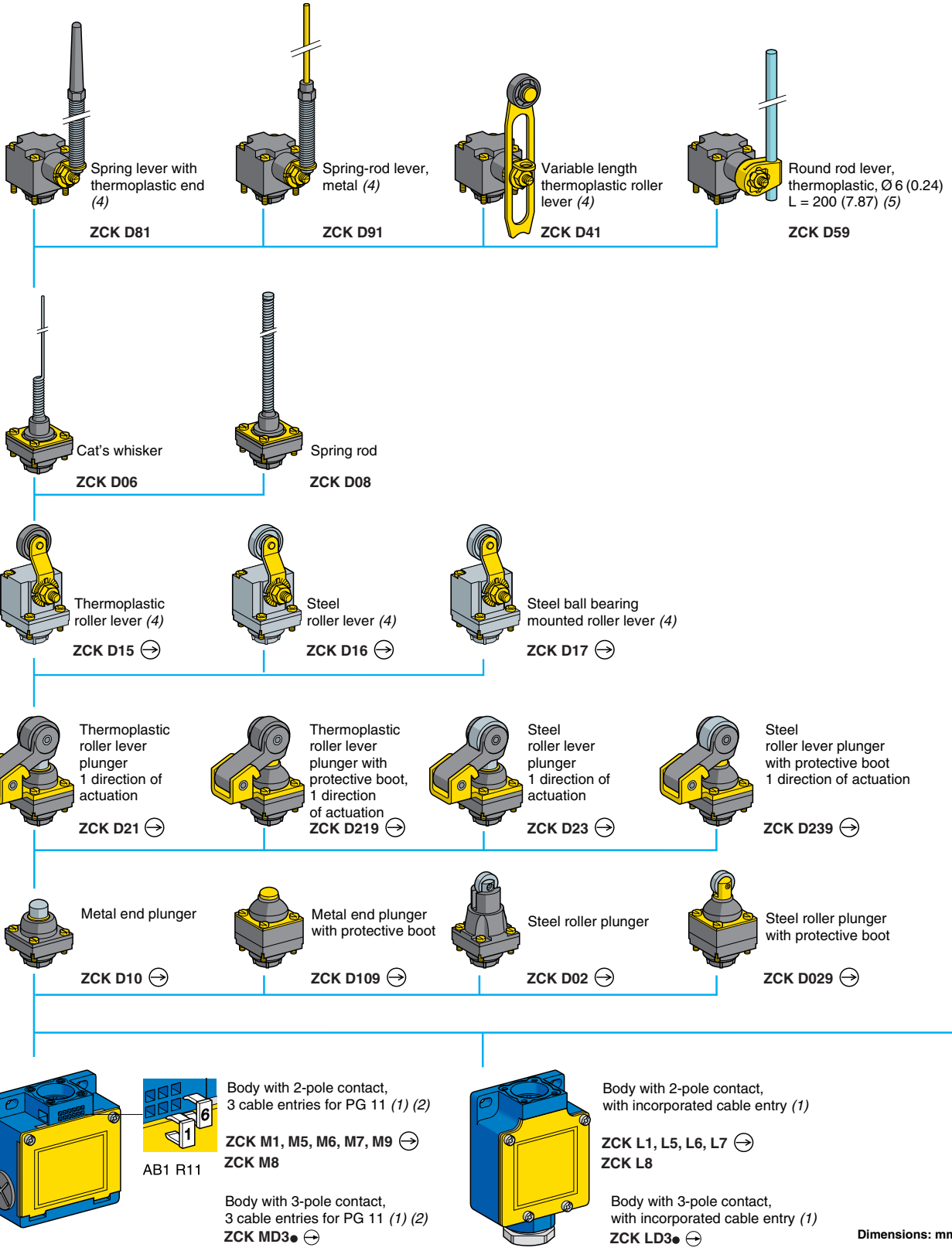
XCKL•06
ZCKL• + ZCKD06
ZCKLD3• + ZCKD06



Body mountings

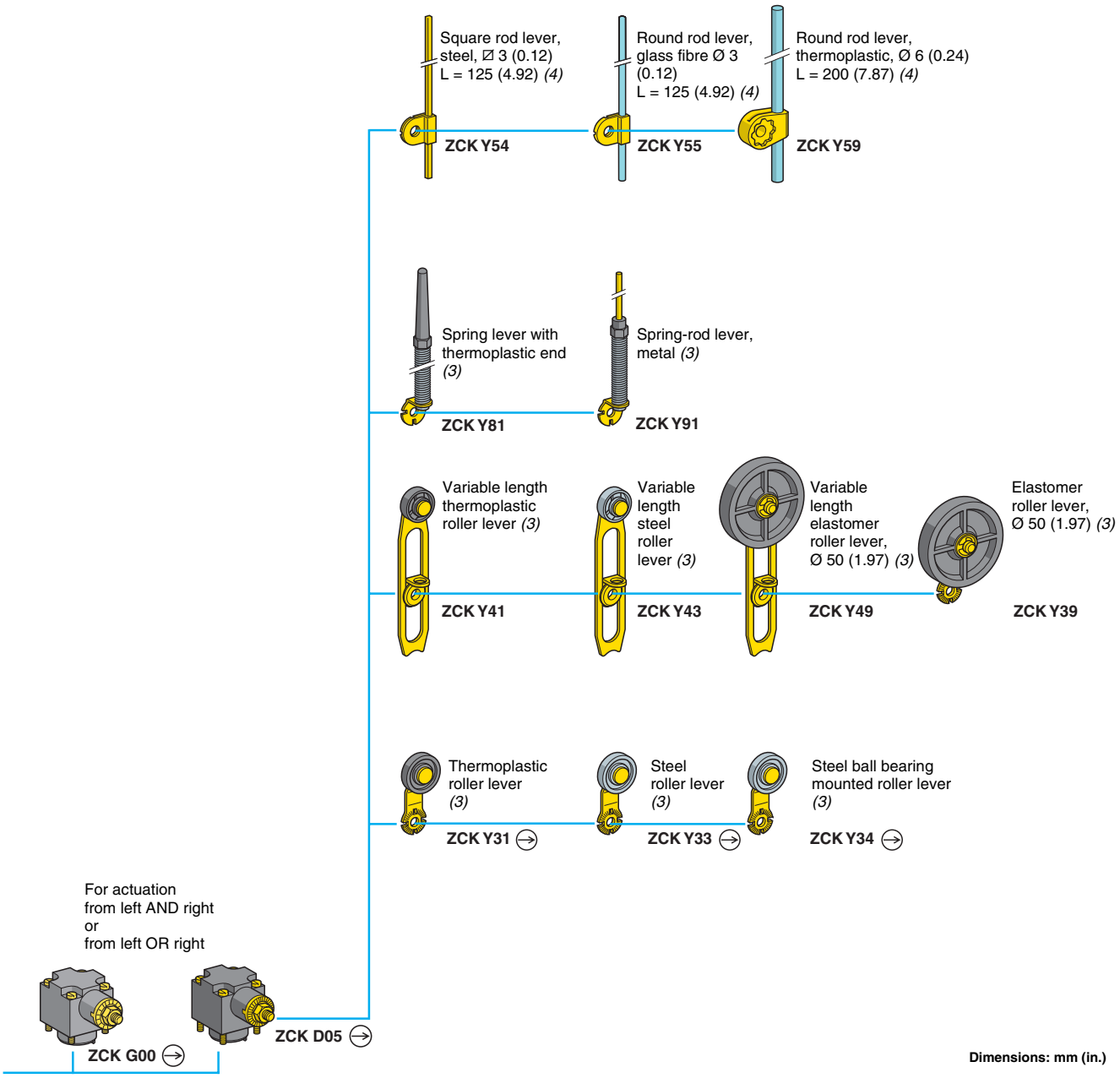


1. Incorporated cable entry.
Ø: 2 elongated holes Ø 5.2 x 6.2.



Dimensions: mm (in.)

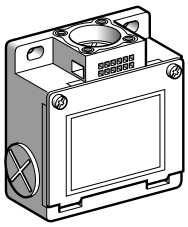
1. For further details. See page 90.
2. For 3 cable entries tapped ISO M20 x 1.5, add **H29** to the catalog number. Example: ZCKM1 becomes **ZCKM1H29**.

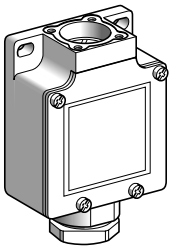


Dimensions: mm (in.)

⊖ head assuring positive opening operation, when properly mounted and using a conforming operator.

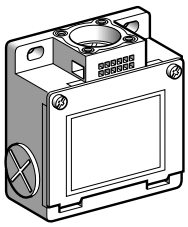
3. Adjustable throughout 360° in 5° steps, or in 90° steps by reversing the notched washer.
4. Adjustable throughout 360° in 5° steps, or in 45° steps by reversing the lever mounting.

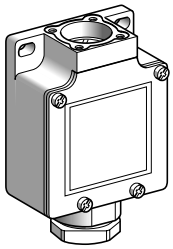




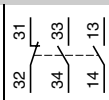
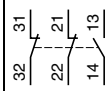
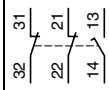
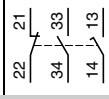
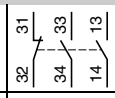
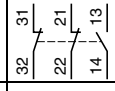
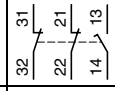
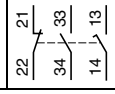
With contact block	Function diagram	Positive operation *(1)*	Cable entry	Catalog number	Weight kg (lb)
Bodies with 2-pole contact					
For limit switches type XCKM					
N/C + N/O snap action (XE2S P2151)	13 21 / 14 22	⊖	1/2" NPT *(2)*	**ZCKM1**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKM1H29**	0.210 (0.463)
N/C + N/O break before make, slow break (XE2N P2151)	13 21 / 14 22	⊖	1/2" NPT *(2)*	**ZCKM5**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKM5H29**	0.210 (0.463)
N/O + N/C make before make, slow break (XE2N P2161)	21 13 / 22 14	⊖	1/2" NPT *(2)*	**ZCKM6**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKM6H29**	0.210 (0.463)
N/C + N/C simultaneous, slow break (XE2N P2141)	11 21 / 12 22	⊖	1/2" NPT *(2)*	**ZCKM7**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKM7H29**	0.210 (0.463)
N/O + N/O simultaneous, slow break (XE2N P2131)	13 23 / 14 24	—	1/2" NPT *(2)*	**ZCKM8**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKM8H29**	0.210 (0.463)
N/C + N/C snap action (XE2S P2141)	11 21 / 12 22	⊖	ISO M20 x 1.5	**ZCKM9H29**	0.210 (0.463)
For limit switches type XCK L					
N/C + N/O snap action (XE2S P2151)	13 21 / 14 22	⊖	1/2" NPT	**ZCKL1**	0.210 (0.463)
N/C + N/O break before make, slow break (XE2N P2151)	13 21 / 14 22	⊖	1/2" NPT	**ZCKL5**	0.210 (0.463)
N/O + N/C make before make, slow break (XE2N P2161)	21 13 / 22 14	⊖	1/2" NPT	**ZCKL6**	0.210 (0.463)
N/C + N/C simultaneous, slow break (XE2N P2141)	11 21 / 12 22	⊖	1/2" NPT	**ZCKL7**	0.210 (0.463)
N/O + N/O simultaneous, slow break (XE2N P2131)	13 23 / 14 24	—	1/2" NPT	**ZCKL8**	0.210 (0.463)

1. ⊖: N/C contact with positive opening operation, when properly mounted and using a conforming operator.
2. 3 PG 11 tapped entries, one with metal adapter for 1/2" NPT (USASB2-1) conduit (PG 8).

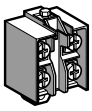


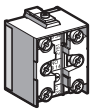


Bodies with 3-pole contact

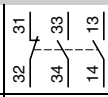
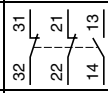
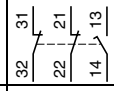
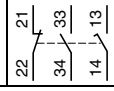
With contact block	Function diagram	Positive operation *(1)*	Cable entry	Catalog number	Weight kg (lb)
For limit switches type XCKM					
N/C + N/O + N/O snap action (XE3S P2151)		⊖	1/2" NPT *(2)*	**ZCKMD31**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKMD31H29**	0.210 (0.463)
N/C + N/C + N/O snap action (XE3S P2141)		⊖	1/2" NPT *(2)*	**ZCKMD39**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKMD39H29**	0.210 (0.463)
N/C + N/C + N/O break before make, slow break (XE3N P2141)		⊖	1/2" NPT *(2)*	**ZCKMD37**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKMD37H29**	0.210 (0.463)
N/C + N/O + N/O break before make, slow break (XE3N P2151)		⊖	1/2" NPT *(2)*	**ZCKMD35**	0.210 (0.463)
			ISO M20 x 1.5	**ZCKMD35H29**	0.210 (0.463)
For limit switches type XCK L					
N/C + N/O + N/O snap action (XE3S P2151)		⊖	1/2" NPT	**ZCKLD31**	0.210 (0.463)
N/C + N/C + N/O snap action (XE3S P2141)		⊖	1/2" NPT	**ZCKLD39**	0.210 (0.463)
N/C + N/C + N/O break before make, slow break (XE3N P2141)		⊖	1/2" NPT	**ZCKLD37**	0.210 (0.463)
N/C + N/O + N/O break before make, slow break (XE3N P2151)		⊖	1/2" NPT	**ZCKLD35**	0.210 (0.463)

1. ⊖: N/C contact with positive opening operation, when properly mounted and using a conforming operator.
2. 3 PG 11 tapped entries, one with metal adapter for 1/2" NPT (USASB2-1) conduit (PG 8).





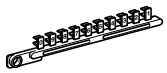
Contact blocks

Type of contact	Function diagram	For bodies	Positive operation *(1)*	Catalog number	Weight kg (lb)
2-pole contact					
N/C + N/O snap action		ZCKM1 ZCKL1	⊖	**XE2SP2151**	0.020 (0.044)
N/C + N/O break before make, slow break		ZCKM5 ZCKL5	⊖	**XE2NP2151**	0.020 (0.044)
N/O + N/C make before break, slow break		ZCKM6 ZCKL6	⊖	**XE2NP2161**	0.020 (0.044)
N/C + N/C simultaneous, slow break		ZCKM7 ZCKL7	⊖	**XE2NP2141**	0.020 (0.044)
N/O + N/O simultaneous, slow break		ZCKM8 ZCKL8	—	**XE2NP2131**	0.020 (0.044)
N/C + N/C snap action		ZCKM9	⊖	**XE2SP2141**	0.020 (0.044)
3-pole contact					
N/C + N/O + N/O snap action		ZCKMD31 ZCKLD31	⊖	**XE3SP2151**	0.035 (0.077)
N/C + N/C + N/O snap action		ZCKMD39 ZCKLD39	⊖	**XE3SP2141**	0.035 (0.077)
N/C + N/C + N/O break before make, slow break		ZCKMD37 ZCKLD37	⊖	**XE3NP2141**	0.035 (0.077)
N/C + N/O + N/O break before make, slow break		ZCKMD35 ZCKLD35	⊖	**XE3NP2151**	0.035 (0.077)

1. ⊖: N/C contact with positive opening operation or sub-assembly assuring positive opening operation when properly mounted and using a conforming operator.

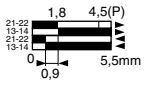
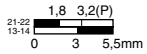
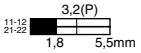
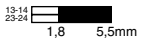
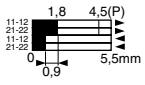
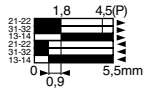
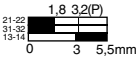
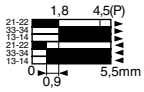
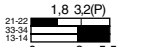
Accessories for limit switches type XCKM

Description	Sold in lots of	Unit catalog number	Weight kg (lb)
Tap-off terminal for cabling continuity	1	**XCKZ09**	0.010 (0.022)
Clip-in markers (strips of 10 numbers: 0 to 9) Other markers, please consult your local sales office.	25	**AB1R11**	0.002 (0.004)

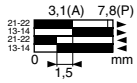
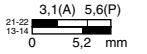
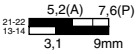
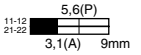
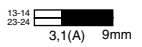
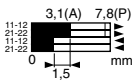
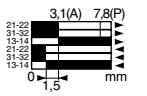
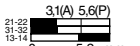
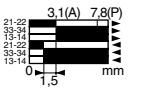
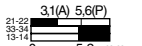


Other versions Gold flashed contacts.
Please consult your local sales office.

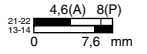
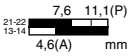
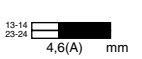
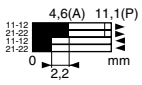
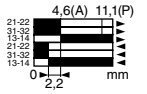
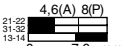
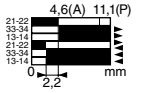
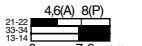
Heads ZCKD10, D109 with body

ZCKM1, L1	ZCKM5, L5	ZCKM6, L6	ZCKM7, L7	ZCKM8, L8
				
ZCKM9	**ZCKMD39, LD39**	**ZCKMD37, LD37**	**ZCKMD31, LD31**	**ZCKMD35, LD35**
				

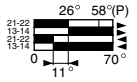
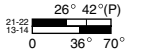
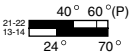
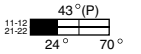
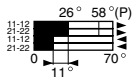
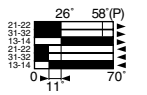
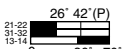
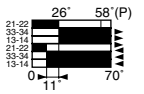
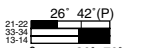
Heads ZCKD02, D029 with body

ZCKM1, L1	ZCKM5, L5	ZCKM6, L6	ZCKM7, L7	ZCKM8, L8
				
ZCKM9	**ZCKMD39, LD39**	**ZCKMD37, LD37**	**ZCKMD31, LD31**	**ZCKMD35, LD35**
				

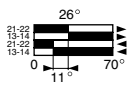
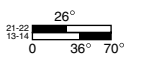
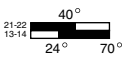
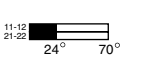
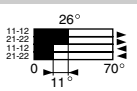
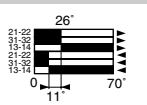
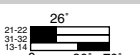
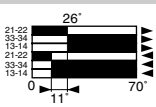
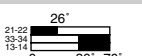
Heads ZCKD21, D23, D219, D239 with body

ZCKM1, L1	ZCKM5, L5	ZCKM6, L6	ZCKM7, L7	ZCKM8, L8
				
ZCKM9	**ZCKMD39, LD39**	**ZCKMD37, LD37**	**ZCKMD31, LD31**	**ZCKMD35, LD35**
				

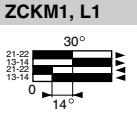
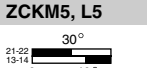
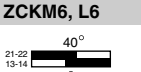
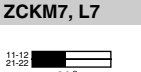
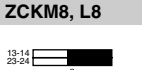
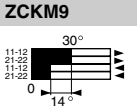
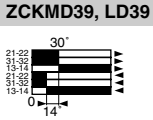
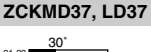
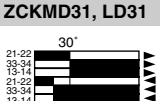
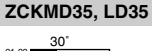
Heads ZCKD15, D16, D17 with body

ZCKM1, L1	ZCKM5, L5	ZCKM6, L6	ZCKM7, L7	ZCKM8, L8
				
ZCKM9	**ZCKMD39, LD39**	**ZCKMD37, LD37**	**ZCKMD31, LD31**	**ZCKMD35, LD35**
				

Heads ZCKD41, D59, D81, D91 with body

ZCKM1, L1	ZCKM5, L5	ZCKM6, L6	ZCKM7, L7	ZCKM8, L8
				
ZCKM9	**ZCKMD39, LD39**	**ZCKMD37, LD37**	**ZCKMD31, LD31**	**ZCKMD35, LD35**
				

Heads ZCKD06, D08 with body

ZCKM1, L1	ZCKM5, L5	ZCKM6, L6	ZCKM7, L7	ZCKM8, L8
				
ZCKM9	**ZCKMD39, LD39**	**ZCKMD37, LD37**	**ZCKMD31, LD31**	**ZCKMD35, LD35**
				

Contact operation

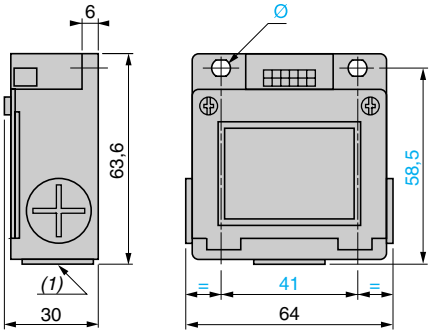
- contact closed
- contact open

(A) = cam displacement

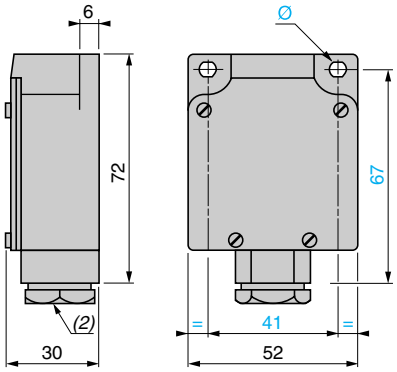
(P) = positive opening point

Bodies with contacts

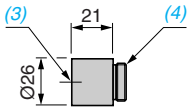
ZCKM1, M5, M6, M7, M8,
ZCKM1H29, M5H29, M6H29, M7H29, M8H29, M9H29



ZCKL1, L5, L6, L7, L8, LD3• *(5)*



Adapter for 1/2" NPT conduit
DE9RA1012



1. 3 tapped entries for ISO M20 x 1.5 or PG 11 conduit thread.
2. Incorporated cable entry.

Ø: 2 elongated holes Ø 5.2 x 6.2.

3. Tapped entry for 1/2" NPT conduit.
4. Threaded sleeve, PG 11.
5. XCKL provided with 1/2" NPT adapter shown above, DE9RA1012.

Complete Switches

For interpretating the complete switch catalog number only

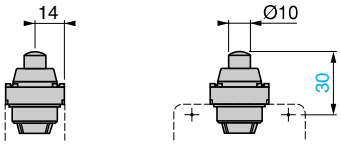
XCK L	____	____	____
X—complete Z—component	**Switch type** 1 SPDT N.O., N.C. snap 5 SPDT N.O., N.C. slow	**Head type** 00—rotary programmable 02—roller plunger 06—wobble stick 10—steel plunger 21—one way 15—rotary	**Levers** (for rotary head 00 only) 11—Delrin® roller 41—adjustable delvin roller

Direct opening contacts meet IEC 60947-5-1 requirements. ⊖

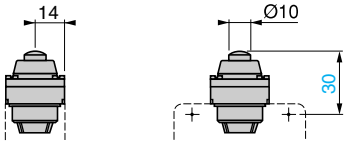
NOTE: Some combinations are not available. Use this information to interpret catalog numbers, not to create them.

Plunger heads

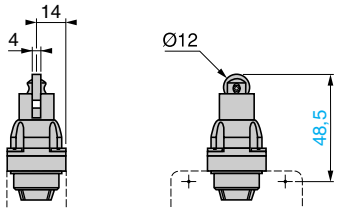
ZCKD10



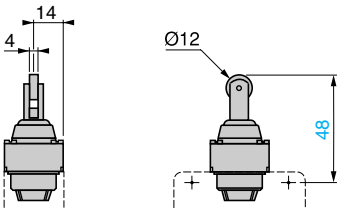
ZCKD109



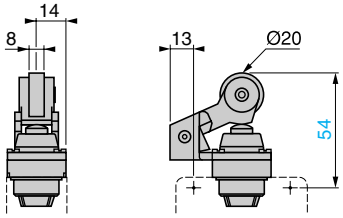
ZCKD02



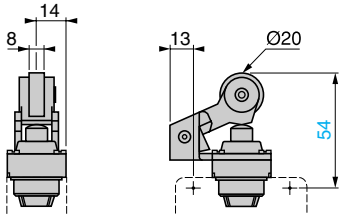
ZCKD029



ZCKD21, D23

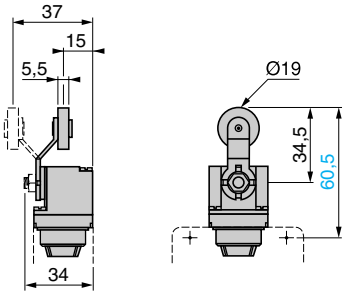


ZCKD219, D239

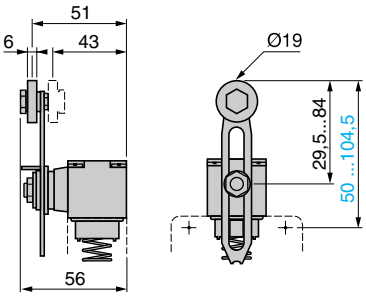


Rotary heads

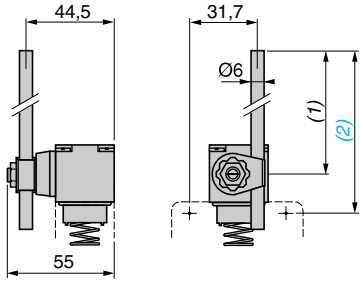
ZCKD15, D16, D17



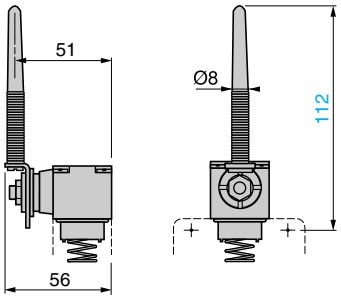
ZCKD41



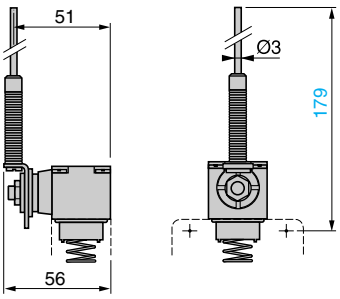
ZCKD59



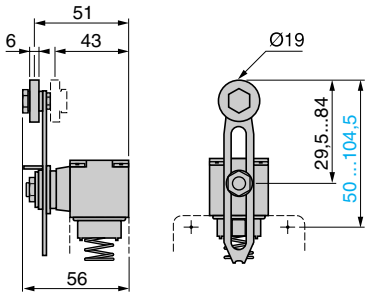
ZCKD81



ZCKD91

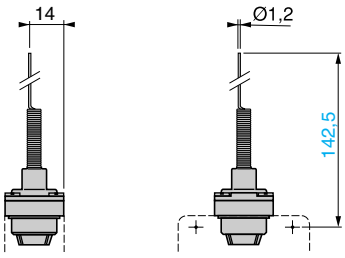


ZCKG00

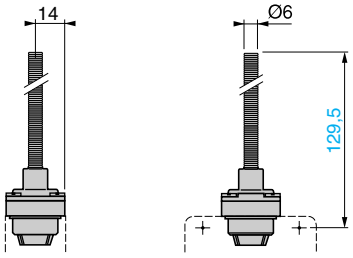


Multi-directional heads

ZCKD06



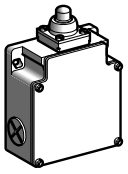
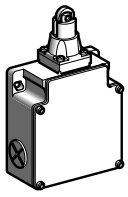
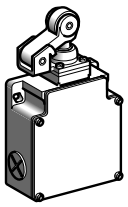
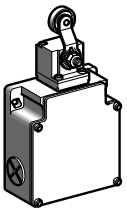
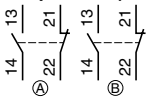
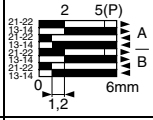
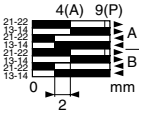
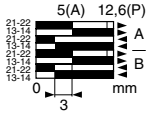
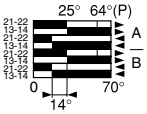
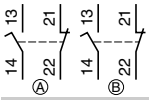
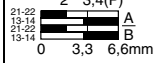
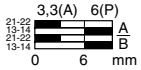
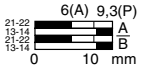
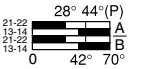
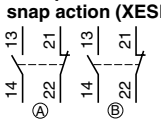
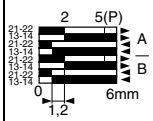
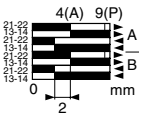
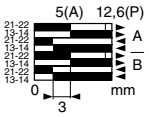
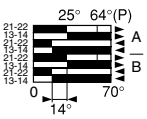
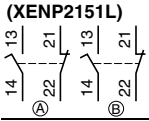
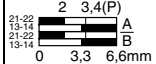
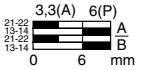
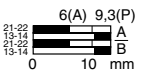
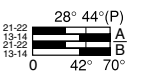
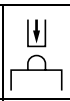
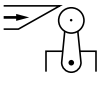
ZCKD08



1. 190 max.
2. 215.5 max.

NOTE: operating lever spindle threaded M6.

Limit Switches
Osiswitch® Classic, Metal
XCKML, 2 x 2-Pole Contacts—Complete Switches

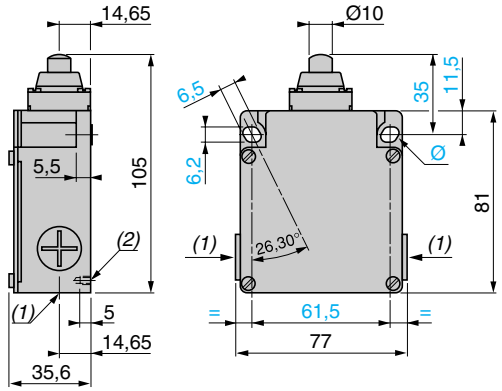
Type of head	Plunger (mounting by the body)			Rotary (mounting by the body)
				
Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever *(1)*
Catalog numbers *(2)*				
Switches with 3 entries tapped ISO M20 x 1.5				
2 x 2-pole N/C + N/O snap action (XESP2151L) 	**XCKML110H29** 	**XCKML102H29** 	**XCKML121H29** 	**XCKML115H29** 
2 x 2-pole N/C + N/O break before make, slow break (XENP2151L) 	**XCKML510H29** 	**XCKML502H29** 	**XCKML521H29** 	**XCKML515H29** 
Switches with 3 entries tapped for PG 13 conduit thread, plus adapter for 1/2" NPT				
2 x 2-pole N/C + N/O snap action (XESP2151L) 	**XCKML110** 	**XCKML102** 	**XCKML121** 	**XCKML115** 
2 x 2-pole N/C + N/O break before make, slow break (XENP2151L) 	**XCKML510** 	**XCKML502** 	**XCKML521** 	**XCKML515** 
Weight, kg (lb)	0.400 (0.882)	0.405 (0.893)	0.450 (0.992)	0.430 (0.948)
Contact operation	■ contact closed □ contact open	(A) = cam displacement (P) = positive opening point	⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	
Characteristics				
Switch actuation	On end	By 30° cam		
Type of actuation				
Maximum actuation speed	0.5 m/s (1.64 ft/s)		1.5 m/s (4.92 ft/s)	
Minimum force — For tripping	15 N (3.37 lb)	12 N (2.70 lb)	8 N (1.80 lb)	0.2 N•m (1.77 lb-in)
Minimum force — For positive opening	60 N (13.49 lb)	50 N (11.24 lb)	50 N (11.24 lb)	0.5 N•m (4.43 lb-in)
Cable entry	3 entries tapped ISO M20 x 1.5, clamping capacity 7 to 13 mm (0.28 to 0.51 in.); or 3 entries tapped for PG 13 conduit thread conforming to NF C 68-300 (DIN PG 13.5), clamping capacity 9 to 12 mm (0.35 to 0.47 in.) (0.35 to 0.47 in.), plus adapter for 1/2" NPT			

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: N/O + N/C make before break, N/C + N/C simultaneous (with positive opening operation, when properly mounted and using a conforming operator), N/C + N/C simultaneous, please consult your local sales office.

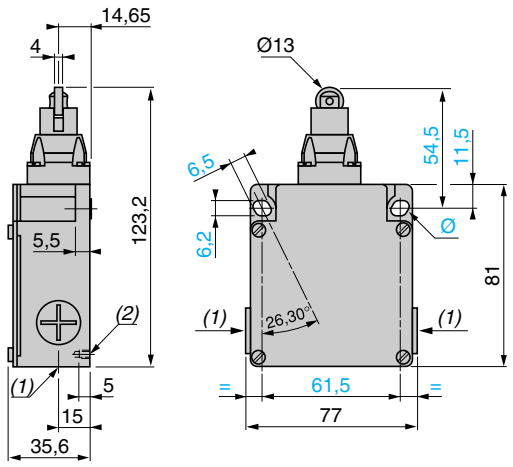
Replacement parts

The heads of limit switches type XCKML are the same as those for types XCKM and XCKL (see heads **ZCKD10**, **ZCKD02**, **ZCKD21** and **ZCKD15** on page 88).

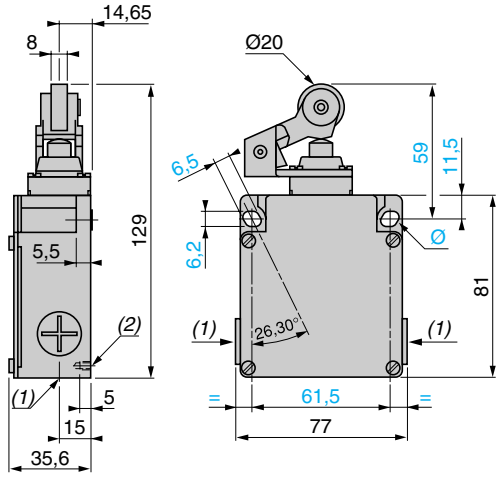
XCKML110H29, XCKML510H29, XCKML110, XCKML510



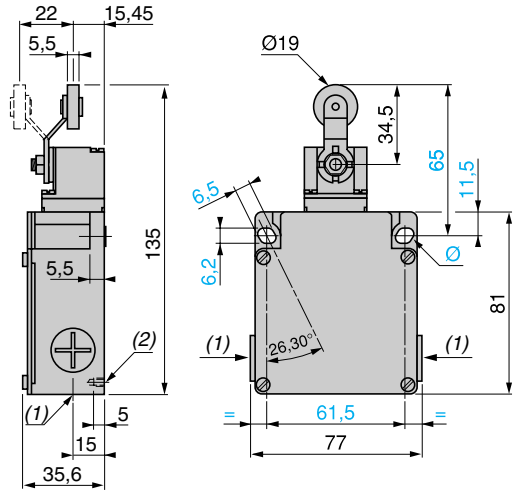
XCKML102H29, XCKML502H29, XCKML102, XCKML502



XCKML121H29, XCKML521H29, XCKML121, XCKML521



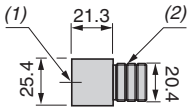
XCKML115H29, XCKML515H29, XCKML115, XCKML515



1. **XCKML•••H29**: 3 entries tapped M20 x 1.5. **XCKML•••**: 3 entries tapped for PG 13 conduit thread (adapter DE9RA1212 for 1/2" NPT available).
2. 2 centering holes Ø 3.9 ± 0.2, cover mounting holes axis.

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

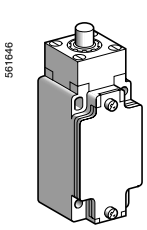
DE9RA1212
(PG 13 to 1/2" NPT adapter)



1. Tapped entry for 1/2" NPT conduit
2. PG 13 threaded sleeve

■ XCKJ
fixed, non-plug-in body with 1 cable entry

□ With head for linear movement (plunger)



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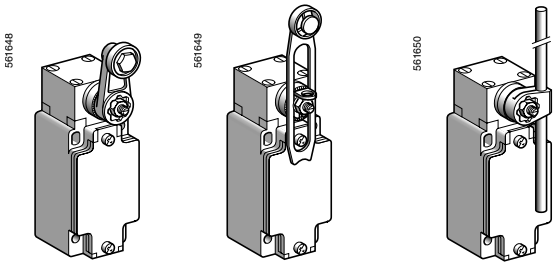
□ With head for rotary movement (lever) or multi-directional



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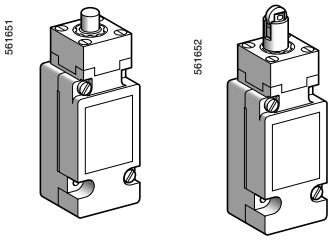
■ XCKJ
plug-in body with 1 cable entry

□ With head for linear movement (plunger)



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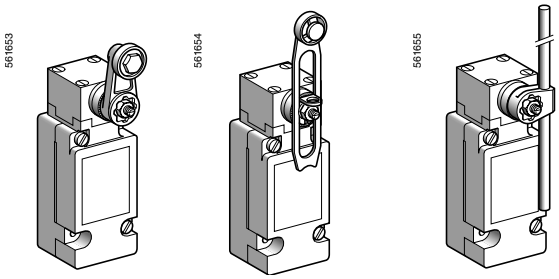
□ With head for rotary movement (lever)



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Environmental characteristics

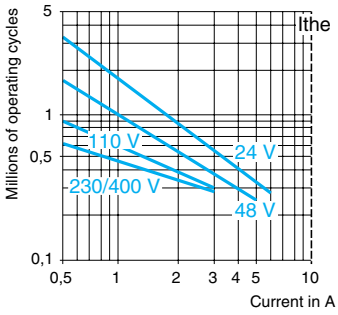
Conforming to standards	Products	IEC 60947-5-1, EN 60947-5-1, UL 508, CSA C22-2 n° 14
	Machine assemblies	IEC 60204-1, EN 60204-1
Product certifications		UL, CSA, CCC
Protective treatment	Version	Standard "TC", special "TH"
Ambient air temperature	Operation	- 25…+70 °C (-13…+158 °F), special sub-assemblies available for extreme temperatures: -40 °C (-40 °F) or +120 °C (248 °F)
	Storage	- 40…+70 °C (-40…+158 °F)
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		NEMA Types 1, 2, 4, 12; IP 66 conforming to IEC 60529; IK 07 conforming to EN 50 102
Repeat accuracy		0.01 mm on the tripping points, with 1 million operating cycles for head with end plunger
Cable entry or integral connector	Depending on model	Tapped entry for PG 13 conduit thread, or tapped ISO M20 x 1.5 or 1/2" NPT, or M12 connector
Materials		Bodies and heads in Zamak® zinc alloy

Contact block characteristics

Rated operational characteristics	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
Rated insulation voltage	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
Rated impulse withstand voltage	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
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
Short-circuit protection	XE2•P	10 A cartridge fuse type gG (gl)
	XE3•P	6 A cartridge fuse type gG (gl)
Cabling (screw clamp terminals)	XE2SP21•1	Clamping capacity, min: 1 x 0.34 mm², max: 2 x 1.5 mm²
	XE2NP21•1	Clamping capacity, min: 1 x 0.5 mm², max: 2 x 2.5 mm²
	XCKJ plug-in and XESP20•1	Clamping capacity, min: 1 x 0.75 mm², max: 2 x 1.5 mm²
	XE3NP and XE3SP	Clamping capacity, min: 1 x 0.34 mm², max: 1 x 1 mm² or 2 x 0.75 mm²
Minimum actuation speed		**XE2SP21•1** and **XE3SP**: 0.01 m/minute (0.03 ft/minute)
		XE2NP21•1 and **XE3NP**: 6 m/minute (19.68 ft/minute)
Electrical durability		• Conforming to IEC 60947-5-1 Appendix C • Utilization categories AC-15 and DC-13 • Maximum operating rate: 3600 operating cycles/hour • Load factor: 0.5

XE2SP21•1, XE2SP2141

a.c. supply
~ 50/60 Hz
inductive circuit

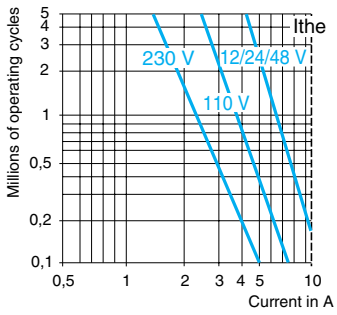


d.c. supply ⎓

Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
inductive	W	10	7	4

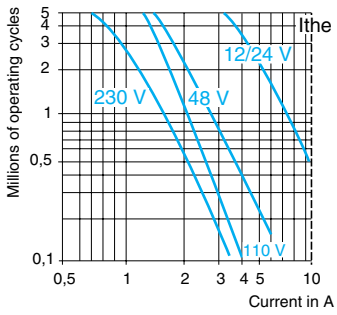
XE2NP21•1



Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
inductive	W	13	9	7

XCKJ plug-in, XESP20•1



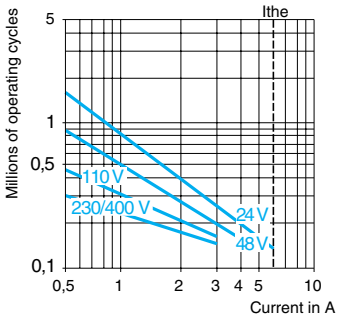
Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
inductive	W	10	7	4

For XE2SP•151 on ~ or ⎓, N/C and N/O contacts simultaneously loaded to the values shown with reverse polarity.

XE3NP••••

a.c. supply
~ 50/60 Hz
inductive circuit

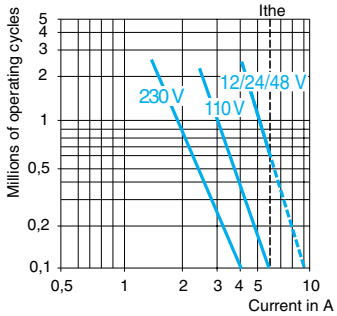


d.c. supply ⎓

Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
inductive	W	3	2	1

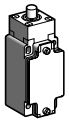
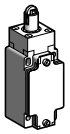
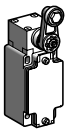
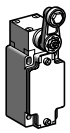
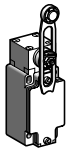
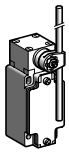
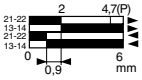
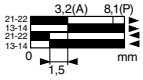
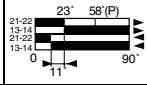
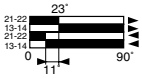
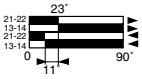
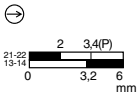
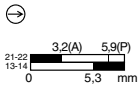
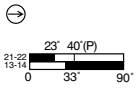
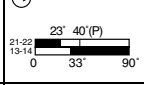
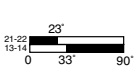
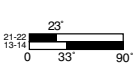
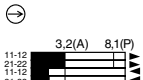
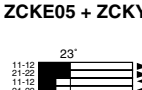
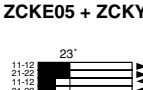
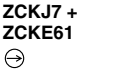
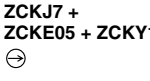
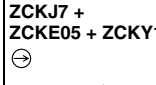
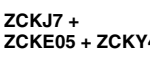
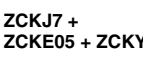
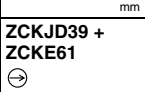
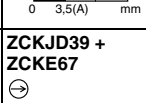
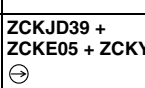
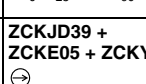
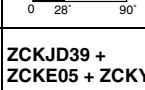
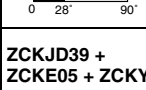
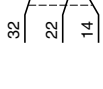
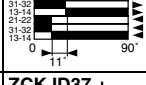
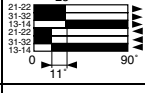
XE3SP••••



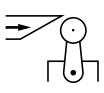
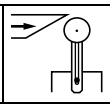
Power switched in W for 5 million operating cycles.

Voltage	V	24	48	120
inductive	W	4	3	2

Limit Switches
Osiswitch® Classic, Metal, Conforming to CENELEC EN 50041
XCKJ—Complete Switches, Fixed Non-plug-in Body, 1/2" NPT Cable Entry

Type of head	Plunger (mounting by the body)		Rotary (mounting by the body) (switches supplied for actuation from left AND right)			
	Form B *(1)*	**Form C** *(1)*	**Form A** *(1)*			**Form D** *(1)*
						
Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever *(3)*	Steel roller lever *(3)*	Variable length thermoplastic roller lever *(3)*	Round thermoplastic rod lever, Ø 6 mm (0.24 in.) *(3) (4)*
Catalog numbers *(2)*						
 **2-pole N/C + N/O snap action (XE2S P2151)**	**XCKJ161** 	**XCKJ167** 	**XCKJ10511** 	**XCKJ10513** 	**XCKJ10541** 	**XCKJ10559** 
 **2-pole N/C + N/O break before make, slow break (XE2N P2151)**	**XCKJ561** 	**XCKJ567** 	**XCKJ50511** 	**XCKJ50513** 	**XCKJ50541** 	**XCKJ50559** 
 **2-pole N/C + N/C snap action (XE2S P2141)**	**ZCKJ9 + ZCKE61** 	**ZCKJ9 + ZCKE67** 	**ZCKJ9 + ZCKE05 + ZCKY11** 	**ZCKJ9 + ZCKE05 + ZCKY13** 	**ZCKJ9 + ZCKE05 + ZCKY41** 	**ZCKJ9 + ZCKE05 + ZCKY59** 
 **2-pole N/C + N/C simultaneous, slow break (XE2N P2141)**	**ZCKJ7 + ZCKE61** 	**ZCKJ7 + ZCKE67** 	**ZCKJ7 + ZCKE05 + ZCKY11** 	**ZCKJ7 + ZCKE05 + ZCKY13** 	**ZCKJ7 + ZCKE05 + ZCKY41** 	**ZCKJ7 + ZCKE05 + ZCKY59** 
 **3-pole N/C + N/C + N/O snap action (XE3S P2141)**	**ZCKJD39 + ZCKE61** 	**ZCKJD39 + ZCKE67** 	**ZCKJD39 + ZCKE05 + ZCKY11** 	**ZCKJD39 + ZCKE05 + ZCKY13** 	**ZCKJD39 + ZCKE05 + ZCKY41** 	**ZCKJD39 + ZCKE05 + ZCKY59** 
 **3-pole N/C + N/C + N/O break before make, slow break (XE3N P2141)**	**ZCKJD37 + ZCKE61** 	**ZCKJD37 + ZCKE67** 	**ZCKJD37 + ZCKE05 + ZCKY11** 	**ZCKJD37 + ZCKE05 + ZCKY13** 	**ZCKJD37 + ZCKE05 + ZCKY41** 	**ZCKJD37 + ZCKE05 + ZCKY59** 
Weight, kg (lb)	0.430 (0.948)	0.455 (1.003)	0.480 (1.058)	0.490 (1.080)	0.485 (1.069)	0.485 (1.069)
Contact operation	■ contact closed □ contact open		*(A)* = cam displacement *(P)* = positive opening point		⊖ N/C contact with positive opening operation, when properly mounted and using a conforming operator	

Characteristics

Switch actuation	On end	By 30° cam				By any moving part
Type of actuation						
Maximum actuation speed	0.5 m/s (1.64 ft/s)	1 m/s (3.28 ft/s)	1.5 m/s (4.92 ft/s)			
Minimum force or torque — For tripping	20 N (4.50 lb)	16 N (3.60 lb)	0.25 N•m (2.21 lb-in)			
Minimum force or torque — For positive opening	50 N (11.24 lb)	40 N (8.99 lb)	0.50 N•m (4.43 lb-in)			—
Cable entry	1 entry tapped 1/2" NPT for ISO cable entry, clamping capacity 9 to 12 mm (0.35 to 0.47 in.)					

1. Form conforming to EN 50041. See page 23.
2. Switches with gold contacts or eyelet type connections: please consult your local sales office.
3. Adjustable throughout 360° in 5° steps, or in 45° steps by reversing the lever or its mounting.
4. Value taken with actuation by moving part at 100 mm (3.94 in.) from the mounting.

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