AchieVe™ IEC Limit Switches

Plastic 50mm IEC Limit Switches ADP Series

- 90-degree adjustable, head, levers are adjustable 10° on the operating shaft
- Snap action contacts (1) N.O./(1) N.C. on each unit
- Reinforced thermoplastic housing
- Wide offering of head actuators
- IP65

Plastic 50mm IEC Limit Switches ADP Series Selection Chart

Part Number	Price	Actuator Type	Max. Actuation Speed	Min. Actuation Force	Min. Positive Opening Force	Travel to Operate Contacts	Total Travel	Travel Diagram	Connection Type	Drawing Link *
ADP2T13Z11	$;5[nz:	Metal plunger with metal roller	0.3 ms	12N	30N	4.7 mm [0.18 in]	9.6 mm [0.37 in]	1	(2) PG11 cable entries with (1) 1/2in NPT adapter	PDF
ADP2T14Z11	$;;5[n]:	Metal plunger with metal roller and dust cap	0.5 ms	15N	30N	2.5 mm [0.09 in]	5.6 mm [0.22 in]	2		PDF
ADP2T35Z11	$;;5[n[:	One-way horizontal lever with metal roller and dust cap	1ms	7N	24N	9mm [0.35 in]	21mm [0.82 in]	3		PDF
ADP2T41Z11	$;5[n_:	Side rotary lever with 18mm nylon roller	1.5 ms	0.1 N•m	0.32 N•m	31°	74°	4		PDF
ADP2T45Z11	$;5[n#:	Side rotary lever inward with 18mm nylon roller								PDF
ADP2T51Z11	$;;5[n!:	Side rotary adjustable lever with 18mm nylon roller								PDF
ADP2T5100Z11	$;5[n?:	Side rotary 2mm step adjustable lever with 18mm nylon roller								PDF
ADP2T71Z11	$;;5[n,:	Side rotary adjustable 3mm stainless steel rod								PDF

*** Weights are included on the drawing.**

ADP2T13Z11

ADP2T14Z11

ADP2T35Z11

ADP2T41Z11

ADP2T45Z11

ADP2T51Z11

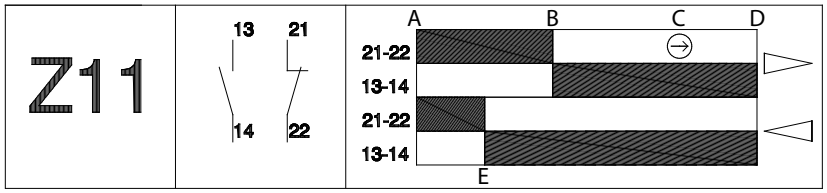
ADP2T5100Z11

ADP2T71Z11

Achieve™ IEC Limit Switches

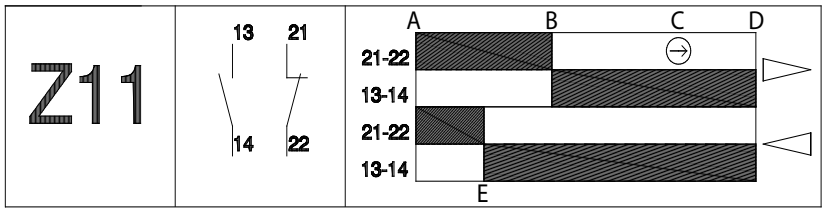
Travel Diagrams

Diagram 1



TAG	mm
A	0
B	4.7
C	7.6
D	9.6
E	2.5

Diagram 2

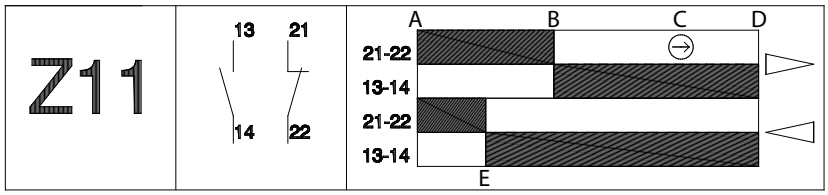


TAG	mm
A	0
B	2.5
C	4.1
D	5.6
E	1.3

Diagram 3

TAG	mm
A	0
B	9
C	14.5
D	21
E	4.9

Diagram 4



TAG	degree
A	0
B	31
C	47
D	74
E	17

IEC Limit Switches Specifications

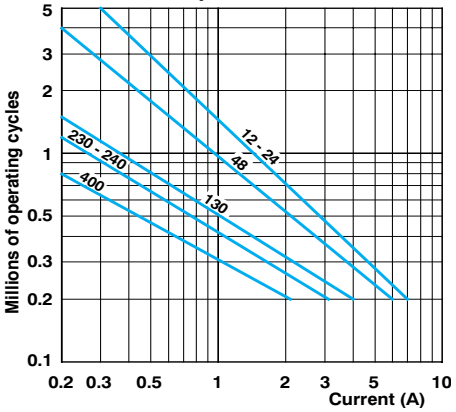
IEC Limit Switches Specifications			
Series		***AAM, AAP, ABM, ABP***	***ADM, ADP***
Environmental			
Degree of Protection		Plastic models: IP65 according to IEC 529 Metal models: IP66 according to IEC 144-CEI70-1; part number ADM2T93Z11 is IP65	
Temperature Range [1]	***Plastic Models***	Storage: -30 to 80°C [-22 to 176° F] Operating: -25 to 70°C [-13 to 158°F];	
	Metal Models	Storage: -30 to 80°C [-22 to 176°F] Operating: -10 to 70°C [14 to 158°F]; part number ADM2T9805Z11A -40 to 70°C [-40 to 158°F]	
Rated Impulse Withstand Voltage		6 kV (degree of pollution 3)	6 kV (degree of pollution 3)
Mechanical Ratings			
Working Positions [2]		All actuators can be rotated in 90° increments	
Mechanical Life		Straight line working heads: 30 million operations, side rotary heads: 25 million operations, multi directional heads: 10 million operations	25 million operations
Enclosure Material		Plastic models AAP and ABP: fiberglass-reinforced plastic-V0 class (UL94); Metal models AAM and ABM: die cast aluminum	ADP models: Reinforced thermoplastic ADM models: Zinc Alloy
Contact Blocks Rating			
Positive Opening [3]		All models except 98, 92, 93 operating heads	
Electrical Ratings	***AC15***	Make: 60A@120VAC; 30A @ 240VAC; 18A @ 400VAC Break:10A @ 24VAC; 6.5 A @130VAC; 3.1 A @ 230VAC; 1.8 A @ 400VAC	10A @ 24VAC, 6A @ 120VAC, 4A @ 400VAC
	DC13	2.8 A @ 24VDC; 0.5 A @ 110VDC	6A @ 24VDC, 0.55 A @125VDC, 0.4A @ 250VDC
Maximum Switching Frequency		Contact blocks: all two cycles per second	3600 (Cycles/hour)
Repeat Accuracy		0.01 mm on the operating points at 1 million operations	
Short-Circuit Protection		Cartridge fuses gl 10A-500V 10.3x38 1 100KA	10A @ < 500VAC (fuse type gG (gl))
Contact Resistance		25 mΩ	
Recommended Min. Operating Speed		With snap-action contacts: 20mm per minute [4] With slow-action contacts: 500mm per minute [5]	20mm per minute
Rated Insulation Voltage		690V	500V
Terminals Marking		According to CENELEC EN 50013	According to IEC 60947-5-1
Wiring Connections		2 x 2.5mm² (AWG14) to 2 x 0.5mm² (AWG18)	18-14 AWG [0.75 to 2.5 mm²]
Wiring Terminal Type		Captive screw with self-lifting pressure plate	M3.5 screw with cable clamp (+, -) pozidriv 2
Electrical Protection		Double insulation (plastic models only)	ADM models Class 1, ADP models Class II - double insulation
Contact Blocks Performance			
Operation Frequency		3600 ops/h	
Electrical Durability (according to IEC 947-5-1)		Utilization categories AC-15 and DC-13; load factor of 0.5.	
Tools Needed		Phillips screwdriver, #1 #2 / Hex wrench, 10mm	Pozidriv 2 screwdriver
Approvals		UL E191072, CE	

[1] Minimum temperatures assume that the atmosphere is free of moisture, which could cause moving parts to freeze up.
[2] Some types of actuators, such as a long, heavy spring with the adjustable actuator fully extended, may not work properly if installed in a horizontal position.
[3] Positive opening in a snap-action contact block is performed by a rigid mechanism that forces the N.C. contact to open in case the snap-action mechanism fails. This would provide protection if, for example, the contacts became "welded" together by excessive current rush. Generally, positive opening is not considered to work properly on switches with actuators that are not a solid design (such as a spring or rubber roller), despite the fact that the contact block itself has positive opening. In order to be considered as having positive opening, a switch must not have flexible components between actuator actioning points and the electrical contact.
[4] This is the speed at which snap-action contact blocks are tested. There is no minimum operating speed for snap-action contacts because the speed has no influence on the switch action. When using spring actuators, the changeover time may vary from 1ms to 3ms from maximum to minimum operating speed.
[5] Slow-action contacts must not be operated at very low speeds because of the tendency to maintain the arc if contacts are not rapidly separated.

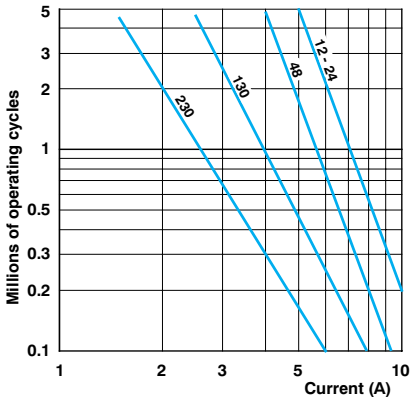
Limit Switches Supplemental

Electrical Durability (according to IEC 947-5-1)

AC-15 Snap Action



AC-15 Slow Action



DC-13	Snap Action	Slow Action
	Power breaking for a durability of 5 million cycles	
24V	9.5 W	12W
48V	6.8 W	9W
110V	3.6 W	6W

Limit switch types

Snap-action contact: A contact element in which the contact motion is independent of the speed of the actuator. This feature ensures reliable electrical performance even in applications involving very slow moving actuators.

Slow-make/slow-break contacts: A contact element in which the contact motion is dependent on the actuator speed.

Terminal identification (IEC)

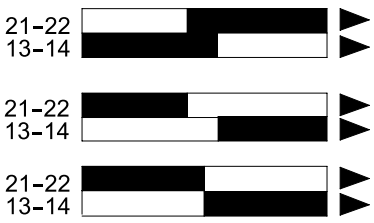
Each terminal is marked with two digits. The first digit indicates the pole (circuit). The second digit indicates the type of contact.

_1-_2 is N.C., _3-_4 is N.O.
so 11-12, 21-22 are N.C., while 13-14, 23-24 are N.O.

Terminal Markings	
European	
Terminal No.	*Type*
11-12	N.C. contact of pole no. 1 [1]
13-14	N.O. contact of pole no. 2 [1]
21-22	N.C. contact of pole no. 2 [2]
23-24	N.O. contact of pole no. 1 [2]

[1] With non-isolated contacts [2] With isolated contacts

Note: Green/yellow wire is physical earth ground.



Make-before-break (overlapping) SPDT: the N.O. contact closes before the N.C. contact opens. (See ex: Y11)

Break-before-make (offset) SPDT: the N.C. contact opens before the N.O. contact closes. (See ex: X11)

Simultaneous make and break SPDT: the N.C. contact opens at the same time as the N.O. contact closes. (See ex: Z11)

= Contact open

= Contact closed

Bar Chart Examples
(cam angle is 30 degrees)

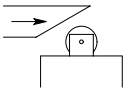
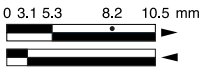


Diagram in millimeters/cam travel



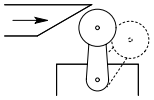
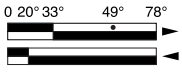


Diagram in degrees/lever rotation



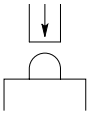
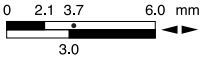


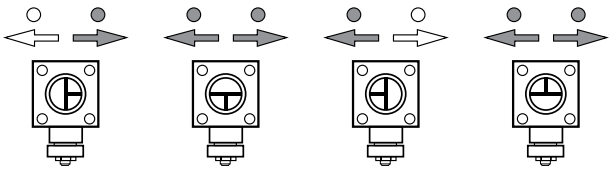
Diagram in millimeters/plunger trave



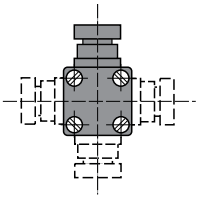
Changeable working heads (E42, E52, E71)

View of cam insert when looking at bottom of head once removed from switch body.

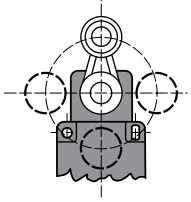
To change position, push in and twist until it locks into place



Positioning - 90º each way



Adjustable lever from 0-360º (6º each increment)



IEC Limit Switches Bar Charts

Contacts Configuration and Bar Charts

A = Max. travel of the operator in mm or degrees

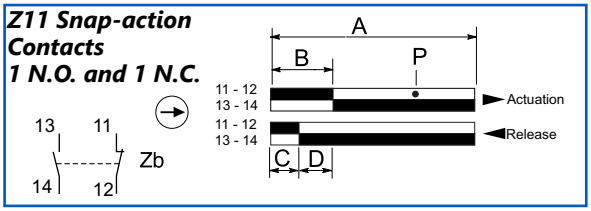
B = Tripping travel of both contacts on actuation

C = Tripping travel of both contacts on release

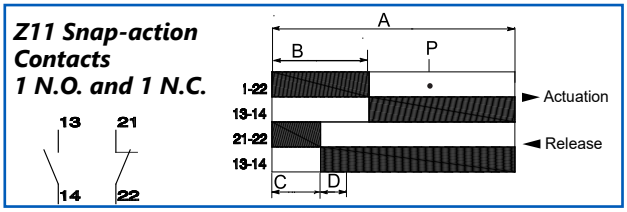
D = Differential travel (between actuation and release)

P = Point from which positive opening is assured during actuation

Z11 Snap-action Contacts 1 N.O. and 1 N.C.



Z11 Snap-action Contacts 1 N.O. and 1 N.C.



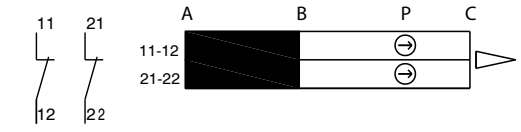
Contact Displacement Values

Part Series	Displacement Values (mm [in] or degrees)			
	A	B	C	P
ABMxE11Z11	6.0 [0.24]	3.0 [0.12]	1.8 [0.07]	4.6 [0.18]
ABMxE13Z11	10.5 [0.41]	5.3 [0.21]	3.1 [0.12]	8.2 [0.32]
ABMxE32Z11	15.5 [0.61]	6.3 [0.25]	3.1 [0.12]	10.8 [0.43]
ABMxE42Z11	78°	33°	20°	49°
ABMxE52Z11	78°	33°	20°	49°
ABMxE71Z11	78°	33°	20°	49°
ABMxE92Z11	—	21°	9°	—
ABMxE93Z11	—	21°	21°	—
ABPxH14Z11	5.9 [0.23]	2.2 [0.09]	1.0 [0.04]	3.8 [0.15]
ABPxH19Z11	10.5 [0.41]	4.6 [0.18]	2.4 [0.09]	7.5 [0.30]
ABPxH35Z11	17 [0.67]	6.8 [0.27]	3.8 [0.15]	11.3 [0.44]
ABPxH41Z11	90°	31°	19°	47°
ABPxH51Z11	90°	31°	19°	47°
ABPxH71Z11	90°	31°	19°	47°
ABPxH92Z11	—	27°	15°	—
ABPxH93Z11	—	27°	15°	—

Contact Displacement Values

Part Number	Displacement Values (mm [in] or degrees)			
	A	B	C	P
ADP2T13Z11	9.6 [0.37]	4.7 [0.19]	2.5 [0.10]	7.6 [0.29]
ADP2T14Z11	5.6 [0.22]	2.5 [0.10]	1.3 [0.05]	4.1 [0.16]
ADP2T35Z11	21 [0.82]	9.0 [0.35]	4.9 [0.19]	14.5 [0.57]
ADP2T41Z11	74°	31°	17°	47°
ADP2T45Z11	74°	31°	17°	47°
ADP2T51Z11	74°	31°	17°	47°
ADP2T5100Z11	74°	31°	17°	47°
ADP2T71Z11	74°	31°	17°	47°
ADM2F11Z11	5.6 [0.22]	2.5 [0.10]	1.3 [0.05]	4.1 [0.16]
ADM2F12Z11	9.6 [0.37]	4.7 [0.19]	2.5 [0.10]	7.6 [0.29]
ADM2T35Z11	21 [0.82]	9.0 [0.35]	4.9 [0.19]	14.5 [0.57]
ADM2F43Z11	74°	31°	17°	47°
ADM2F46Z11	74°	31°	17°	47°
ADM2F53Z11	74°	31°	17°	47°
ADM2F71Z11	74°	31°	17°	47°
ADM2T93Z11	23°	23°	12°	—
ADM2T9805Z11A	5.6 [0.22]	2.0 [0.07]	0.9 [0.03]	—

J02 Snap-action Contacts 2 N.C.



Contact Displacement Values

Part Number	Displacement Values (mm [in] or degrees)			
	A	B	C	P
AHP2R002J02-024	—	2.4 [0.09]		4 [0.15]
AHP2T11J02-024	—	2.4 [0.09]		4 [0.15]
AHP2T12J02-024	—	4.5 [0.17]		7.4 [0.29]
AHP2T30J02-024	—	8.6 [0.33]		13.1 [0.51]
AHP2T32J02-024	—	8.6 [0.33]		13.1 [0.51]
AHP2T41J02-024	—	30°		46°
AHP2T5100J02-024	—	30°		46°
AHP2T5200J02-024	—	30°		46°