Compact Limit Switches

Metal Housing (Halogen-Free Cable)

AEM2G Series

- Die-cast metal housings
- 1m halogen-free cable
- 1 N.O. and 1 N.C. contact on all units
- Compact size with standard 25mm hole spacing
- Wide offering of head actuators
- Epoxy resin filled for IP67 rating
- Snap-action (Z11) contacts
- N.C. contacts are positive-opening operated unless otherwise noted.

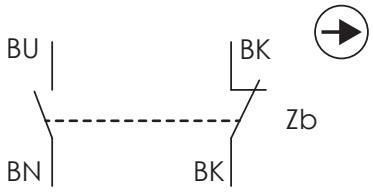
AEM2G Series Compact Limit Switches Selection Chart

Part Number	Price	Drawing Link	Actuator Type	Max. Actuation Speed (m/s [ft/sec])	Min. Actuation Force (N) or Torque (N•m)	Min. Positive Opening Force (N) or Torque (N•m)	Connection Type
AEM2G12Z11-HF1	$26.00	PDF	Metal plunger with metal roller	0.1 [0.33]	10N [2.25 lbf]	30N [6.74 lbf]	3.28 ft [1m] cable, bottom exit
AEM2G16Z11-HF1	$26.00	PDF	Metal plunger with dust cap	0.5 [1.64]	15N [3.37 lbf]	30N [6.74 lbf]	3.28 ft [1m] cable, bottom exit
AEM2G42Z11-HF1	$26.00	PDF	Side rotary lever with 14mm metal roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	3.28 ft [1m] cable, bottom exit
AEM2G51Z11-HF1	$26.00	PDF	Side rotary adjustable lever with 18mm nylon roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	3.28 ft [1m] cable, bottom exit
AEM2G71Z11-HF1	$26.00	PDF	Side rotary adjustable 3mm stainless steel rod	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	3.28 ft [1m] cable, bottom exit
AEM2G93Z11-HF1*	$26.00	PDF	360 degree stainless steel spring	0.1 [0.33]	0.10 N•m [0.07 lb•ft]	—	3.28 ft [1m] cable, bottom exit

*** This unit is not a positive opening unit.**

Contact Configuration

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



NOTE: Units are positive opening unless indicated otherwise in selection chart

AEM2G12Z11-HF1

AEM2G16Z11-HF1

AEM2G71Z11-HF1

AEM2G42Z11-HF1

AEM2G51Z11-HF1

AEM2G93Z11-HF1

Compact Limit Switches Specifications

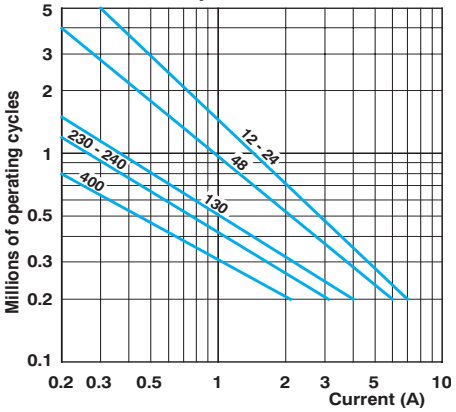
Compact Limit Switches Specifications		
Series		***AEM-HF1***
Environmental		
Degree of Protection		IP67 according to IEC 60529
Temperature Range		Storage: -40 to 70°C [-40 to 158°F]. Operating: -25 to 70°C [-13 to 158°F]
Mechanical Ratings		
Mechanical Life		10 million operations: Models G12, G42, G51, G71 5 million operations: G16, G93.
Enclosure Material		ZAMAK (zinc alloy)
Contact Blocks Rating		
Positive Opening		Yes, except G93
Electrical Ratings	***AC15***	Make: 100A @ 24VAC; 60A @ 120VAC; 30A @ 240VAC Break: 10A @ 24VAC; 6A @ 120VAC; 3A @ 240VAC
	DC13	2.8A @ 24VDC; 0.55A @ 125VDC; 0.27A@250VDC
Maximum Switching Frequency		Contact blocks: all one cycle per second
Repeat Accuracy		0.05 mm on the operating points at 1 million operations
Short-Circuit Protection		10A @ <500V
Contact Resistance		25mΩ
Head Rotation		180 Degree Only
Rated Insulation Voltage		B300, R300 according to UL508 400V (degree of pollution: 3) according to IEC 60947-1
Connection Type		Cable: 1m [3.28 ft] Halogen Free cable, 5 x 0.75mm² (18 AWG). Overall cable diameter: 8mm [0.31 in]
Wiring Terminal Markings		N.C. black/brown, N.O. blue/brown
Electrical Protection		Class I according to IEC60536-1
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
Torque		N/A
Agency Approvals *		UL file E191072, CE

***To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.**

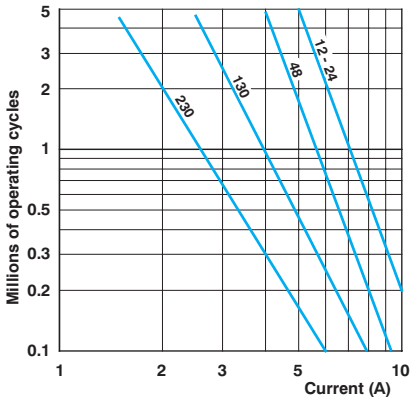
Limit Switches Supplemental

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)

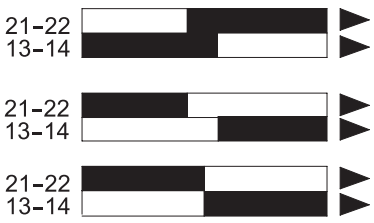
Each terminal is marked with two digits. The first digit indicates the pole (circuit). The second digit indicates the type of contact.

_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.



= Contact open

= Contact closed

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)

Bar Chart Examples
(cam angle is 30 degrees)

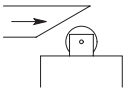
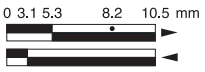


Diagram in millimeters/cam travel



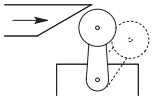
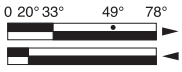


Diagram in degrees/lever rotation



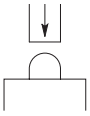
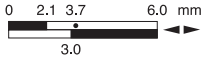


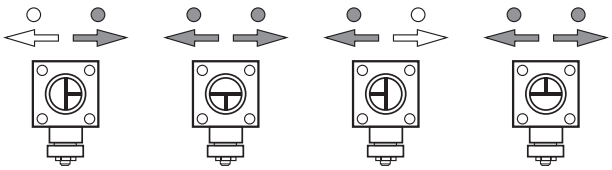
Diagram in millimeters/plunger trave



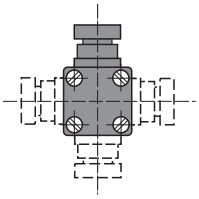
Changeable working heads (E42, E52, E71)

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

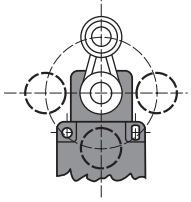
To change position, push in and twist until it locks into place



Positioning - 90º each way

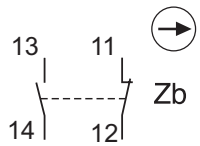


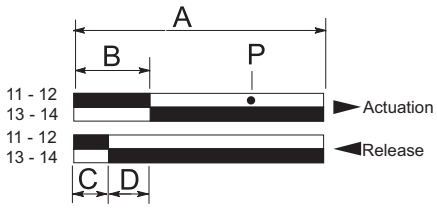
Adjustable lever from 0-360º (6º each increment)



Contact Displacement Values

Z11 Snap Action Contacts
1 N.O. and 1 N.C.





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

Contact Displacement Values				
Part Series	***Displacement Values — mm [in] or degrees***			
	A	***B***	***C***	***P***
AEM Halogen				
AEM2G12Z11-HF1	8.7 [0.343]	3.8 [0.150]	2.4 [0.095]	7.5 [0.295]
AEM2G16Z11-HF1	5 [0.197]	2.2 [0.867]	1.4 [0.055]	4.3 [0.169]
AEM2G42Z11-HF1	74°	32°	21°	65°
AEM2G51Z11-HF1	74°	32°	21°	65°
AEM2G71Z11-HF1	74°	32°	21°	65°
AEM2G93Z11-HF1	—	10°	20°	—
AAM Series				
AAMxF11Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAMxF12Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAMxT14Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAMxT35Z11x	21 [0.827]	9 [0.354]	4.5 [0.177]	14.5 [0.571]
AAMxF43Z11x	74°	31°	17°	47°
AAMxF46Z11x	74°	31°	17°	47°
AAMxF53Z11x	74°	31°	17°	47°
AAMxF71Z11x	74°	31°	17°	47°
AAMxT93Z11x	—	12°	23°	—
AAP Series				
AAPxT10Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAPxT13Z11x	9.6 [0.378]	4.7 [0.185]	2.5 [0.098]	7.6 [0.299]
AAPxT14Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAPxT35Z11x	21 [0.827]	9 [0.354]	4.5 [0.177]	14.5 [0.571]
AAPxT41Z11x	74°	31°	17°	47°
AAPxT42Z11x	74°	31°	17°	47°
AAPxT45Z11x	74°	31°	17°	47°
AAPxT51Z11x	74°	31°	17°	47°
AAPxT5100Z11x	74°	31°	17°	47°
AAPxT5200Z11x	74°	31°	17°	47°
AAPxT71Z11x	74°	31°	17°	47°
AAPxT93Z11x	—	12°	23°	—

Contact Displacement Values tables continued on next page

Achieve™ IEC Limit Switches Bar Charts

Contacts Configuration and Bar Charts

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

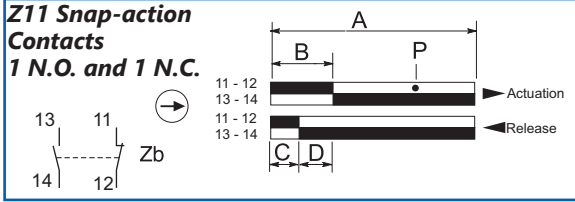
B = Tripping travel of both contacts on actuation

C = Tripping travel of both contacts on release

D = Differential travel (between actuation and release)

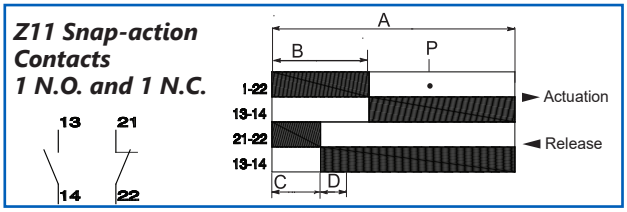
P = Point from which positive opening is assured during actuation

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



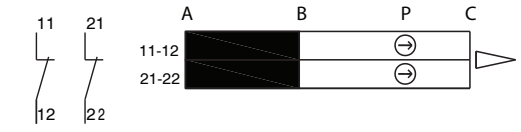
Contact Displacement Values				
Part Series	*Displacement Values (mm [in] or degrees)*			
	A	*B*	*C*	*P*
ABMxE11Z11	6.0 [0.24]	3.0 [0.12]	1.8 [0.07]	4.6 [0.18]
ABMxE13Z11	10.5 [0.41]	5.3 [0.21]	3.1 [0.12]	8.2 [0.32]
ABMxE32Z11	15.5 [0.61]	6.3 [0.25]	3.1 [0.12]	10.8 [0.43]
ABMxE42Z11	78°	33°	20°	49°
ABMxE52Z11	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°	—

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



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°

Contact Displacement Values (continued)

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

B = Tripping travel of the N.C. contact

C = Tripping travel of the N.O. contact

D = Differential travel (between actuation and release)

P = Point from which positive opening is assured during actuation

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

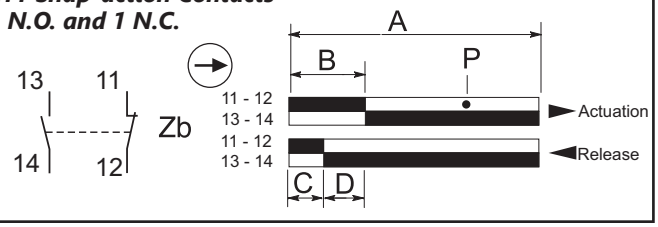
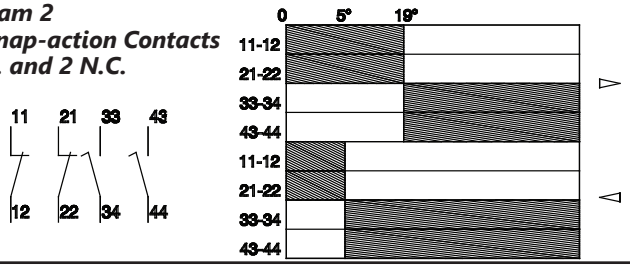


Diagram 2
Z22 Snap-action Contacts
2 N.O. and 2 N.C.



Contact Displacement Values

Part Series	Contact Configuration	Displacement Values mm [in] or degrees			
		A	B	C	P
AEP2G11	Z11	5.0 [0.20]	2.2 [0.09]	1.4 [0.06]	4.3 [0.17]
AEP2G11	Z22	5.0 [0.20]	2.1 [0.82]	1.3 [0.05]	4.0 [0.16]
AEP2G12	Z11	8.7 [0.34]	3.8 [0.15]	2.2 [0.09]	7.5 [0.30]
AEP2G12	Z22	8.7 [0.34]	3.8 [0.15]	2.3 [0.09]	7.0 [0.27]
AEP2G16	Z11	5.0 [0.20]	2.2 [0.09]	1.4 [0.06]	4.3 [0.17]
AEP2G16	Z22	5.0 [0.20]	2.1 [0.82]	1.3 [0.05]	4.0 [0.16]
AEP2G21	Z22	5.0 [0.20]	2.1 [0.82]	1.3 [0.05]	4.0 [0.16]
AEP2G22	Z22	8.7 [0.34]	3.8 [0.14]	2.3 [0.09]	7.0 [0.27]
AEP2G41	Z11	74°	32°	21°	65°
AEP2G41	Z22	75°	30°	10°	55°
AEP2G42	Z11	74°	32°	21°	65°
AEP2G43	Z11	74°	32°	21°	65°
AEP2G51	Z11	74°	32°	21°	65°
AEP2G51	Z22	75°	30°	10°	55°
AEP2G71	Z11	74°	32°	21°	65°
AEP2G92	Z11	—	20°	10°	—
AEP2G93	Z11	—	20°	10°	—
AEP2G93	Z22	—	19°	5°	—