

# Achieve™ Compact Limit Switches

## Lever with Roller Actuator AEM Series

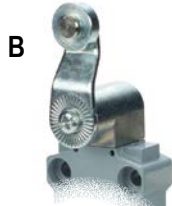
- Die-cast metal housings
- 9.8 ft [3m] cable/5-pin M12 quick-disconnect (bottom and right)
- Compact size with standard 25mm [0.98 in] hole spacing
- Wide offering of head actuators
- Epoxy resin-filled for IP67 rating
- Snap action (Z11) and (Z22), slow make/slow break (X11), contacts available
- N.C. contacts are positive-opening operated unless otherwise noted

### Compact Limit Switches AEM Series Selection Chart

Part Number	Price	Drawing Link	Actuator Type	Max. Actuation Speed	Min. Actuation Force	Min. Positive Opening Force	Number of Contacts	Contact Configuration	Connection Type	Photo
<a href="#">AEM2G41Z11-3</a>	\$33.00	<a href="#">PDF</a>	Side rotary lever with 14mm nylon roller	1.5 ms	0.08 N•m	0.28 N•m	(1) N.O./(1) N.C.	Diagram 1	9.8 ft [3m] cable (bottom exit)	A
<a href="#">AEM2G41X11-3</a>	\$33.00	<a href="#">PDF</a>						Diagram 2		
<a href="#">AEM2G4120Z11-3R</a>	\$29.00	<a href="#">PDF</a>						Diagram 1	9.8 ft [3m] cable (right exit)	
<a href="#">AEM2G4120Z11M</a>	\$27.00	<a href="#">PDF</a>							5-pin M12 quick-disconnect (bottom exit)	
<a href="#">AEM2G4120Z11MR</a>	\$27.00	<a href="#">PDF</a>							5-pin M12 quick-disconnect (right exit)	
<a href="#">AEM2G4120Z22-3</a>	\$36.50	<a href="#">PDF</a>					(2) N.O./(2) N.C.	Diagram 3	9.8 ft [3m] cable (bottom exit)	
<a href="#">AEM2G42Z11-3</a>	\$33.50	<a href="#">PDF</a>	Side rotary lever with 14mm metal roller	1.5 ms	0.08 N•m	0.28 N•m		Diagram 1	9.8 ft [3m] cable (bottom exit)	B
<a href="#">AEM2G42X11-3</a>	\$33.50	<a href="#">PDF</a>						Diagram 2		
<a href="#">AEM2G4220Z11-3R</a>	\$29.00	<a href="#">PDF</a>					Diagram 1	9.8 ft [3m] cable (right exit)		
<a href="#">AEM2G4220Z11M</a>	\$27.00	<a href="#">PDF</a>						5-pin M12 quick-disconnect (bottom exit)		
<a href="#">AEM2G4220Z11MR</a>	\$27.00	<a href="#">PDF</a>						5-pin M12 quick-disconnect (right exit)		
<a href="#">AEM2G43Z11-3</a>	\$34.00	<a href="#">PDF</a>	Side rotary lever with 14mm ball bearing roller	1.5 ms	0.08 N•m	0.28 N•m	(1) N.O./(1) N.C..	Diagram 1	9.8 ft [3m] cable (bottom exit)	C
<a href="#">AEM2G43X11-3</a>	\$34.00	<a href="#">PDF</a>						Diagram 2		
<a href="#">AEM2G4320Z11-3R</a>	\$30.50	<a href="#">PDF</a>						Diagram 1	9.8 ft [3m] cable (right exit)	
<a href="#">AEM2G4320Z11M</a>	\$27.00	<a href="#">PDF</a>							5-pin M12 quick-disconnect (bottom exit)	
<a href="#">AEM2G4320Z11MR</a>	\$27.00	<a href="#">PDF</a>							5-pin M12 quick-disconnect (right exit)	
<a href="#">AEM2G45Z11-3</a>	\$35.00	<a href="#">PDF</a>	Side rotary lever with 18mm nylon roller	1.5 ms	0.08 N•m	0.28 N•m		Diagram 1	9.8 ft [3m] cable (bottom exit)	D
<a href="#">AEM2G45X11-3</a>	\$35.00	<a href="#">PDF</a>						Diagram 2		
<a href="#">AEM2G4520Z11-3R</a>	\$30.50	<a href="#">PDF</a>						Diagram 1	9.8 ft [3m] cable (right exit)	
<a href="#">AEM2G4520Z11M</a>	\$28.00	<a href="#">PDF</a>							5-pin M12 quick-disconnect (bottom exit)	
<a href="#">AEM2G4520Z11MR</a>	\$28.00	<a href="#">PDF</a>							5-pin M12 quick-disconnect (right exit)	



Cable Out (bottom exit)



Cable Out (right exit)



5-pin M12 quick-disconnect (bottom exit)



5-pin M12 quick-disconnect (right exit)





# Compact Limit Switches

## Specifications

Compact Limit Switches Specifications AEM Series			
Type		(1) N.O./ (1) N.C.	(2) N.O./ (2) N.C.
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 G16, G92, G93: 5 million operations.	
Enclosure Material		ZAMAK (zinc alloy)	
Contact Blocks Rating			
Positive Opening		Yes, except G61, G92, G93	All models except 92, 93 operating heads
Electrical Ratings	AC-15	Make: 100A @ 24VAC; 60A @ 120VAC; 30A @ 240VAC Break: 10A @ 24VAC; 6A @ 120VAC; 3A @ 240VAC	4A @ 24VDC, 3A @ 240VAC
	DC-13	2.8 A @ 24VDC; 0.55 A @ 125VDC; 0.27 A@250VDC	2A @ 24VDC, 0.4 A @ 250VDC
Maximum Switching Frequency		Contact blocks: all one cycle per second	3600 [cycles/hour]
Repeat Accuracy		0.05 mm on the operating points at 1 million operations	
Short-Circuit Protection		10A @ <500V	4A @ <500VAC Part number <a href="#">AEM2G9301Z22-3</a> is 10A @ <500VAC
Contact Resistance		25mΩ	
Recommended Min Operating Speed		With snap-action contacts: 20mm per minute With slow-action contacts: 500mm per minute	
Rated Insulation Voltage		B300, R300 according to UL508; 400V (degree of pollution: 3) according to IEC 60947-1	C300 - R300 according to UL508, 250V (degree of pollution 3)
Connection Type		Cable: 3m [9.8 ft] PVC cable, 5 x 0.75 mm² (18AWG). Overall cable diameter: 8.20 mm (0.32 in) Connector: 5-pin M12 quick-disconnect	Pigtail 3m [9.8 ft], PVC, 0.5 mm² [20AWG]
Wiring Terminal Markings		According to CENELEC EN50013	N.C. Gray/Brown Red/Pink N.O. Blue/Yellow Green/White
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		All: 0.5 N•m [0.8 N•m max]	N/A
Approvals		UL file E191072, CE	

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



# Compact Limit Switches Supplemental

## Limit Switch Types

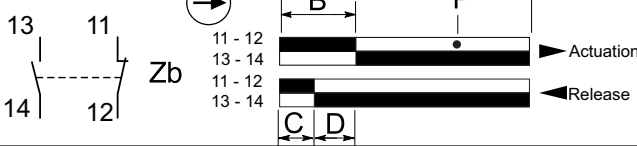
**Snap action contact:** A contact element in which the contact motion is independent of the speed of the actuator. This feature ensures reliable electrical performance even in applications involving very slow moving actuators.

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

## Contact Displacement Values and Bar Charts

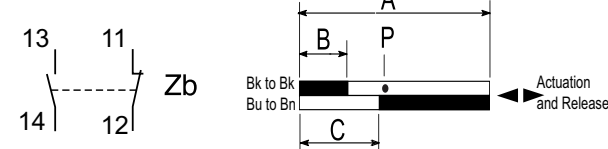
**Diagram 1**

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



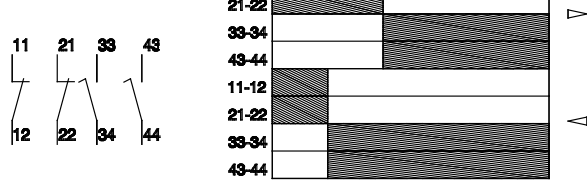
**Diagram 2**

**X11 Snap-action Contacts**  
1 N.O. and 1 N.C.



**Diagram 3**

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



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

B = Tripping travel of the N.C. contact

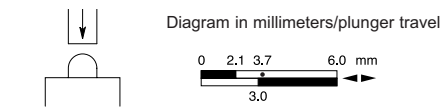
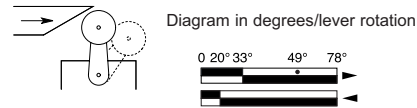
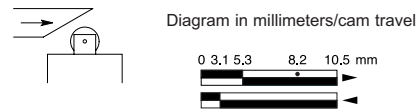
C = Tripping travel of the N.O. contact

D = Differential travel (between actuation and release)

P = Point from which positive opening is assured during actuation

### Bar Chart Examples

(cam angle is 30 degrees)

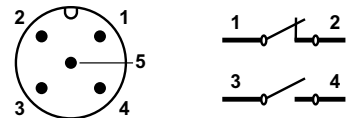


Note: Values represent travel of cam in direction of arrow.

## Contact Displacement Values

Part Series	Contact Configuration	Displacement Values mm [in] or degrees			
		A	B	C	P
AEM2G11, AEM2G16, AEM2G18, AEM2G21	Z11	5.0 [0.20]	2.2 [0.09]	1.4 [0.06]	4.3 [0.17]
AEM2G11, AEM2G16, AEM2G21	X11	5.0 [0.20]	1.9 [0.07]	3.2 [0.13]	3.4 [0.13]
AEM2G11, AEM2G16, AEM2G21	Z22	5.0 [0.20]	2.1 [0.82]	1.3 [0.05]	4.0 [0.16]
AEM2G12, AEM2G13, AEM2G14, AEM2G15, AEM2G17, AEM2G18, AEM2G22, AEM2G23, AEM2G24, AEM2G25	Z11	8.7 [0.34]	3.8 [0.15]	2.4 [0.09]	7.5 [0.30]
AEM2G12, AEM2G13, AEM2G14, AEM2G15, AEM2G22, AEM2G23, AEM2G24, AEM2G25	X11	8.7 [0.34]	3.3 [0.13]	5.7 [0.22]	5.9 [0.23]
AEM2G12, AEM2G22	Z22	3.6 [0.14]	8.7 [0.34]	2.3 [0.09]	7.0 [0.27]
AEM2G41, AEM2G42, AEM2G43, AEM2G45, AEM2G51, AEM2G71, AEM2G72, AEM2G73, AEM2G74, AEM2G75	Z11	74°	32°	21°	65°
AEM2G41, AEM2G42, AEM2G43, AEM2G45, AEM2G51, AEM2G71, AEM2G72, AEM2G73, AEM2G74, AEM2G75	X11	74°	28°	48°	50°
AEM2G41, AEM2G51	Z22	75°	30°	10°	55°
AEM2G61	Z11	74°	32°	21°	Not positive-opening
AEM2G61	X11	74°	28°	48°	
AEM2G92	Z11	—	20°	10°	
AEM2G93	Z11	—	20°	10°	—
AEM2G93	Z22	—	19°	5°	

5-Pin M12 connector



Note: Green/yellow wire is physical earth ground.

□ = Contact open  
■ = Contact closed