

# Compact Limit Switches

## AEM2G Series (Metal Plunger with Roller Actuator)

- Die-cast metal housings
- 3m cable/5-pin M12 quick disconnect (center and right)
- 1 N.O. and 1 N.C. contact on all units
- Compact size with standard 25 mm hole spacing
- Wide offering of head actuators
- Epoxy resin-filled for IP67 rating
- Both snap-action (Z11) and slow-make/slow-break (X11) contacts available
- N.C. contacts are positive-opening operated unless otherwise noted. →

AEM2G Series Compact Limit Switches Selection Chart									
Part Number	Price	Actuator Type	Max. Actuation Speed (m/s)	Min. Actuation Force (N)/ Torque (Nm)	Min. Positive Opening Force (N)/ Torque (Nm)	Head Dimensions	Contact Config. Diagram	Connection Type	Photo
<b>AEM2G12Z11-3</b>		metal plunger with metal roller	0.1	10	30	Figure 2	Diagram 1	Cable Out (Bottom)	A
<b>AEM2G12X11-3</b>							Diagram 2		
<b>AEM2G1201Z11-3R</b>							Diagram 1	Cable Out (Right)	
<b>AEM2G1201Z11M</b>								5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G1201Z11MR</b>								5-Pin M12 Quick Disconnect (Right)	
<b>AEM2G13Z11-3</b>		metal plunger with nylon roller	0.1	10	30	Figure 2	Diagram 1	Cable Out (Bottom)	B
<b>AEM2G13X11-3</b>							Diagram 2		
<b>AEM2G1301Z11-3R</b>							Diagram 1	Cable Out (Right)	
<b>AEM2G1301Z11M</b>								5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G1301Z11MR</b>								5-Pin M12 Quick Disconnect (Right)	
<b>AEM2G14Z11-3</b>		metal plunger with metal cross roller	0.1	10	30	Figure 3	Diagram 1	Cable Out (Bottom)	C
<b>AEM2G14X11-3</b>							Diagram 2		
<b>AEM2G1401Z11-3R</b>							Diagram 1	Cable Out (Right)	
<b>AEM2G1401Z11M</b>								5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G1401Z11MR</b>								5-Pin M12 Quick Disconnect (Right)	
<b>AEM2G15Z11-3</b>		metal plunger with nylon cross roller	0.1	10	30	Figure 3	Diagram 1	Cable Out (Bottom)	D
<b>AEM2G15X11-3</b>							Diagram 2		
<b>AEM2G1501Z11-3R</b>							Diagram 1	Cable Out (Right)	
<b>AEM2G1501Z11M</b>								5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G1501Z11MR</b>								5-Pin M12 Quick Disconnect (Right)	



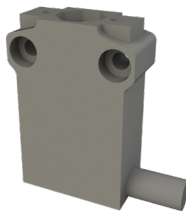
B

C

D



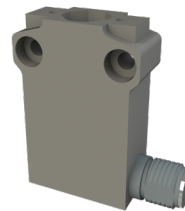
Cable Out (Bottom)



Cable Out (Right)



5-Pin M12 Quick Disconnect (Bottom)



5-Pin M12 Quick Disconnect (Right)

# Compact Limit Switches

## AEM2G Series (Metal Plunger with Roller Actuator)

(Continued)

AEM2G Series Compact Limit Switches Selection Chart									
Part Number	Price	Actuator Type	Max. Actuation Speed (m/s)	Min. Actuation Force (N)/ Torque (Nm)	Min. Positive Opening Force (N)/ Torque (Nm)	Head Dimensions	Contact Config. Diagram	Connection Type	Photo
<b>AEM2G17Z11-3</b>		metal plunger with metal roller and dust cap	0.1	10	30	Figure 5	Diagram 1	Cable Out (Bottom)	E
<b>AEM2G1701Z11-3R</b>								Cable Out (Right)	
<b>AEM2G1701Z11M</b>								5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G1701Z11MR</b>								5-Pin M12 Quick Disconnect (Right)	
<b>AEM2G22Z11-3</b>		metal plunger with metal roller and fixing nuts	0.1	10	30	Figure 8	Diagram 1	Cable Out (Bottom)	F
<b>AEM2G22X11-3</b>							Diagram 2	Cable Out (Right)	F
<b>AEM2G2201Z11-3R</b>							Diagram 1	5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G2201Z11M</b>								5-Pin M12 Quick Disconnect (Right)	
<b>AEM2G2201Z11MR</b>									
<b>AEM2G23Z11-3</b>		metal plunger with nylon roller and fixing nuts	0.1	10	30	Figure 8	Diagram 1	Cable Out (Bottom)	G
<b>AEM2G23X11-3</b>							Diagram 2	Cable Out (Right)	
<b>AEM2G2301Z11-3R</b>							Diagram 1	5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G2301Z11M</b>								5-Pin M12 Quick Disconnect (Right)	
<b>AEM2G2301Z11MR</b>									
<b>AEM2G24Z11-3</b>		metal plunger with metal cross roller and fixing nuts	0.1	10	30	Figure 9	Diagram 1	Cable Out (Bottom)	H
<b>AEM2G24X11-3</b>							Diagram 2	Cable Out (Right)	
<b>AEM2G2401Z11-3R</b>							Diagram 1	5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G2401Z11M</b>								5-Pin M12 Quick Disconnect (Right)	
<b>AEM2G2401Z11MR</b>									
<b>AEM2G25Z11-3</b>		metal plunger with nylon cross roller and fixing nuts	0.1	10	30	Figure 9	Diagram 1	Cable Out (Bottom)	I
<b>AEM2G25X11-3</b>							Diagram 2	Cable Out (Right)	
<b>AEM2G2501Z11-3R</b>							Diagram 1	5-Pin M12 Quick Disconnect (Bottom)	
<b>AEM2G2501Z11M</b>								5-Pin M12 Quick Disconnect (Right)	
<b>AEM2G2501Z11MR</b>									



E



F



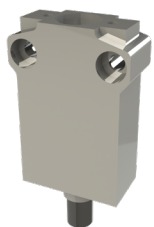
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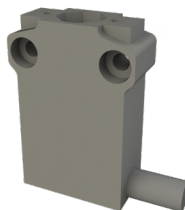
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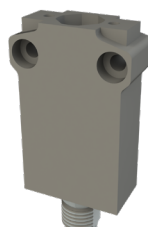
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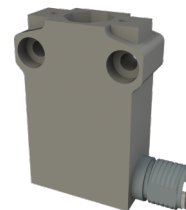
Cable Out (Bottom)



Cable Out (Right)



5-Pin M12 Quick Disconnect (Bottom)



5-Pin M12 Quick Disconnect (Right)

# Compact Limit Switches Dimensions

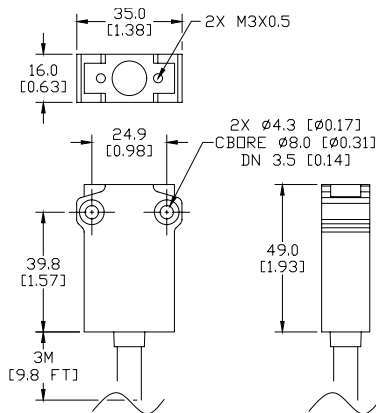
## AEM2G Series Bodies

### Dimensions

mm [inches]

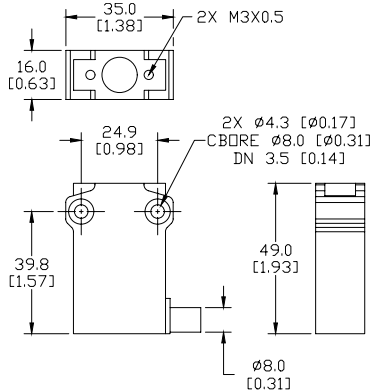
#### AEM2Gxxxx-3

##### Cable Out (Bottom)



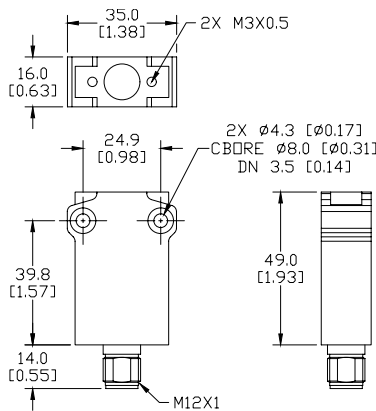
#### AEM2Gxxxx-3R

##### Cable Out (Right)



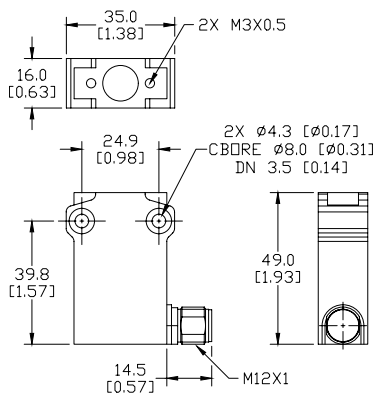
#### AEM2Gxxxx-M

##### 5-Pin M12 Quick Disconnect (Bottom)



#### AEM2Gxxxx-MR

##### 5-Pin M12 Quick Disconnect (Right)



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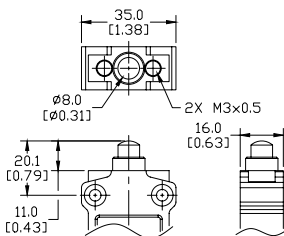
# Compact Limit Switches Dimensions

## Dimensions

mm [inches]

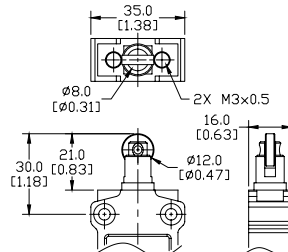
### AEM2G Series Heads

Figure 1



**AEM2G11\*11-\***

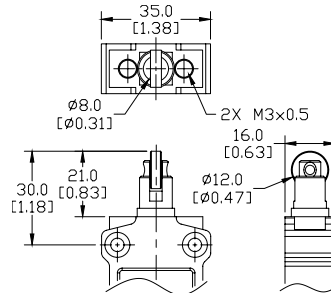
Figure 2



**AEM2G12\*11-\***

**AEM2G13\*11-\***

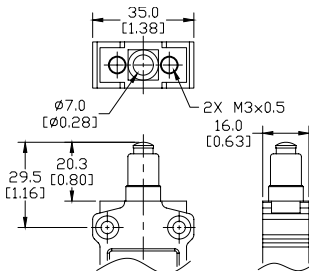
Figure 3



**AEM2G14\*11-\***

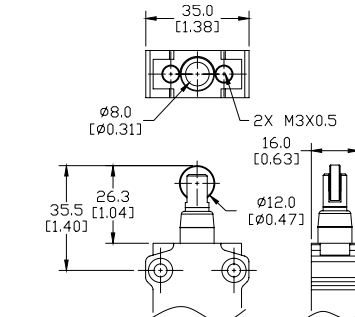
**AEM2G15\*11-\***

Figure 4



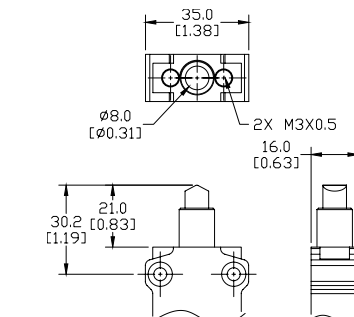
**AEM2G16\*11-\***

Figure 5



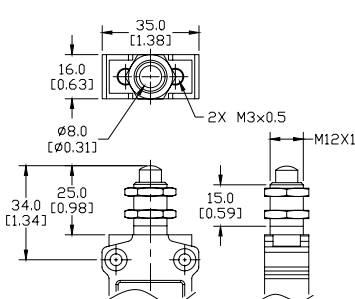
**AEM2G17\*11-\***

Figure 6



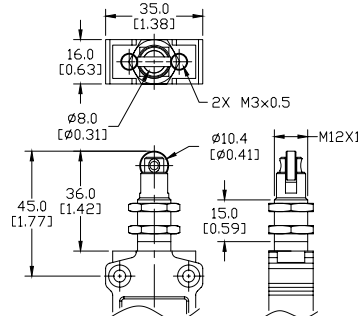
**AEM2G18\*11-\***

Figure 7



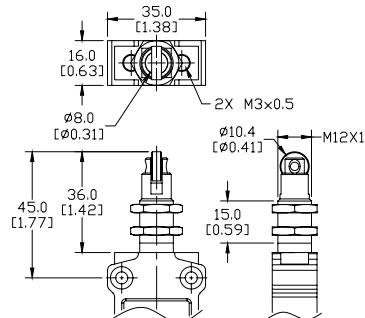
**AEM2G21\*11-\***

Figure 8



**AEM2G22\*11-\***

Figure 9



**AEM2G24\*11-\***

**AEM2G25\*11-\***

See our website, [www.AutomationDirect.com](http://www.AutomationDirect.com), for complete Engineering drawings.

# Compact Limit Switches

Compact Limit Switches Specifications		
Approvals		
UL file E191072, CE		
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	
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	
Recommended Minimum Operating Speed	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	
Connection Type	Cable: 3m PVC cable, 5 x 0.75mm <sup>2</sup> (18 AWG). Overall cable diameter: 8.20 mm (0.32 in.) Connector: 5-pin M12 quick disconnect	
Wiring Terminal Markings	According to CENELEC EN50013	
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 Nm (0.8 Nm max)	

# Compact Limit Switches

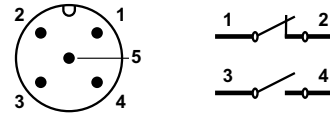
## Contacts Configuration

### 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.

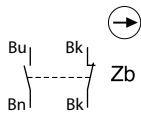
5-Pin M12 connector



### Contacts Configuration

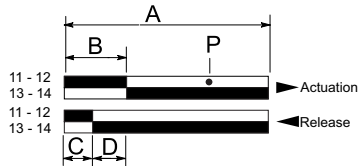
Diagram 1

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



### Bar Charts

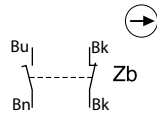
Z11



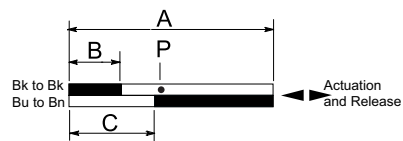
A = Max. travel of the operator in mm or degrees  
B = Tripping travel of both contacts on actuation  
C = Tripping travel of both contacts on release  
D = Differential travel (between actuation and release)  
P = Point from which positive opening is assured during actuation

Diagram 2

X11 Slow-make/slow-break contacts  
1 N.O. and 1 N.C.



X11

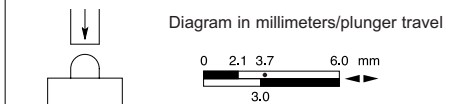
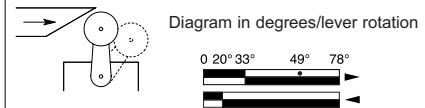
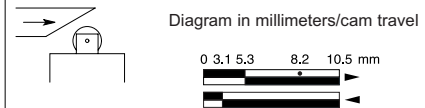


A = Max. travel of the operator in mm or degrees  
B = Tripping travel of the N.C. contact  
C = Tripping travel of the N.O. contact  
P = Point from which positive opening is assured during actuation

**Note:** Green/yellow )Pin 5 wire is physical earth ground.

= Contact open  
 = Contact closed

### Bar Chart Examples (cam angle is 30 degrees)



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

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)
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)
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°
AEM2G61	Z11	74°	32°	21°	Not positive-opening
AEM2G61	X11	74°	28°	48°	
AEM2G92	Z11		20°	10°	
AEM2G93	Z11		20°	10°	