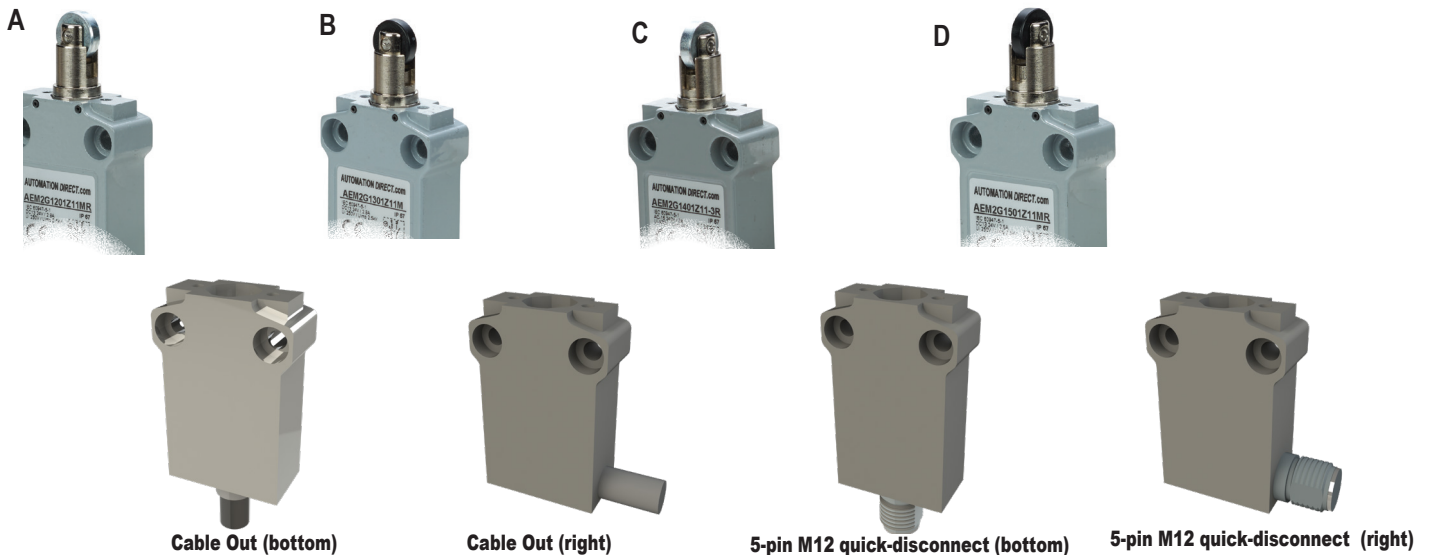


# Compact Limit Switches

## 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 25mm [0.98 in] 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 | Drawing Link        | Actuator Type                         | Maximum Actuation Speed (m/s) | Min. Actuation Force (N)<br>Torque (N•m) | Min. Positive Opening Force (N)<br>Torque (N•m) | Contact Config. | Connection Type                     | Photo |
| <a href="#">AEM2G12Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with metal roller       | 0.1                           | 10                                       | 30                                              | Diagram 1       | Cable Out (bottom)                  | A     |
| <a href="#">AEM2G12X11-3</a>                        |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 | Diagram 2       |                                     |       |
| <a href="#">AEM2G1201Z11-3R</a>                     |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 | Diagram 1       | Cable Out (right)                   |       |
| <a href="#">AEM2G1201Z11M</a>                       |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 |                 | 5-pin M12 quick-disconnect (bottom) |       |
| <a href="#">AEM2G1201Z11MR</a>                      |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 |                 | 5-pin M12 quick-disconnect (right)  |       |
| <a href="#">AEM2G13Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with nylon roller       | 0.1                           | 10                                       | 30                                              | Diagram 1       | Cable Out (bottom)                  | B     |
| <a href="#">AEM2G13X11-3</a>                        |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 | Diagram 2       |                                     |       |
| <a href="#">AEM2G1301Z11-3R</a>                     |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 | Diagram 1       | Cable Out (right)                   |       |
| <a href="#">AEM2G1301Z11M</a>                       |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 |                 | 5-pin M12 quick-disconnect (bottom) |       |
| <a href="#">AEM2G1301Z11MR</a>                      |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 |                 | 5-pin M12 quick-disconnect (right)  |       |
| <a href="#">AEM2G14Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with metal cross roller | 0.1                           | 10                                       | 30                                              | Diagram 1       | Cable Out (bottom)                  | C     |
| <a href="#">AEM2G14X11-3</a>                        |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 | Diagram 2       |                                     |       |
| <a href="#">AEM2G1401Z11-3R</a>                     |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 | Diagram 1       | Cable Out (right)                   |       |
| <a href="#">AEM2G1401Z11M</a>                       |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 |                 | 5-pin M12 quick-disconnect (bottom) |       |
| <a href="#">AEM2G1401Z11MR</a>                      |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 |                 | 5-pin M12 quick-disconnect (right)  |       |
| <a href="#">AEM2G15Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with nylon cross roller | 0.1                           | 10                                       | 30                                              | Diagram 1       | Cable Out (bottom)                  | D     |
| <a href="#">AEM2G15X11-3</a>                        |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 | Diagram 2       |                                     |       |
| <a href="#">AEM2G1501Z11-3R</a>                     |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 | Diagram 1       | Cable Out (right)                   |       |
| <a href="#">AEM2G1501Z11M</a>                       |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 |                 | 5-pin M12 quick-disconnect (bottom) |       |
| <a href="#">AEM2G1501Z11MR</a>                      |       | <a href="#">PDF</a> |                                       |                               |                                          |                                                 |                 | 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 | Drawing Link        | Actuator Type                                         | Max. Actuation Speed (m/s)         | Min. Actuation Force (N)<br>Torque (N·m) | Min. Positive Opening Force (N)<br>Torque (N·m) | Contact Configuration | Connection Type                     | Photo |                                     |
| <a href="#">AEM2G17Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with metal roller and dust cap          | 0.1                                | 10                                       | 30                                              | Diagram 1             | Cable Out (bottom)                  | E     |                                     |
| <a href="#">AEM2G1701Z11-3R</a>                     |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 |                       | Cable Out (right)                   |       |                                     |
| <a href="#">AEM2G1701Z11M</a>                       |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 |                       | 5-pin M12 quick-disconnect (bottom) |       |                                     |
| <a href="#">AEM2G1701Z11MR</a>                      |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 |                       | 5-pin M12 quick-disconnect (right)  |       |                                     |
| <a href="#">AEM2G22Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with metal roller and fixing nuts       | 0.1                                | 10                                       | 30                                              | Diagram 1             | Cable Out (bottom)                  | F     |                                     |
| <a href="#">AEM2G22X11-3</a>                        |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 | Diagram 2             |                                     |       |                                     |
| <a href="#">AEM2G2201Z11-3R</a>                     |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 | Diagram 1             |                                     |       | Cable Out (right)                   |
| <a href="#">AEM2G2201Z11M</a>                       |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 |                       |                                     |       | 5-pin M12 quick-disconnect (bottom) |
| <a href="#">AEM2G2201Z11MR</a>                      |       | <a href="#">PDF</a> |                                                       | 5-pin M12 quick-disconnect (right) |                                          |                                                 |                       |                                     |       |                                     |
| <a href="#">AEM2G23Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with nylon roller and fixing nuts       | 0.1                                | 10                                       | 30                                              | Diagram 1             | Cable Out (bottom)                  | G     |                                     |
| <a href="#">AEM2G23X11-3</a>                        |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 | Diagram 2             |                                     |       |                                     |
| <a href="#">AEM2G2301Z11-3R</a>                     |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 | Diagram 1             |                                     |       | Cable Out (right)                   |
| <a href="#">AEM2G2301Z11M</a>                       |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 |                       |                                     |       | 5-pin M12 quick-disconnect (bottom) |
| <a href="#">AEM2G2301Z11MR</a>                      |       | <a href="#">PDF</a> |                                                       | 5-pin M12 quick-disconnect (right) |                                          |                                                 |                       |                                     |       |                                     |
| <a href="#">AEM2G24Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with metal cross roller and fixing nuts | 0.1                                | 10                                       | 30                                              | Diagram 1             | Cable Out (bottom)                  | H     |                                     |
| <a href="#">AEM2G24X11-3</a>                        |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 | Diagram 2             |                                     |       |                                     |
| <a href="#">AEM2G2401Z11-3R</a>                     |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 | Diagram 1             |                                     |       | Cable Out (right)                   |
| <a href="#">AEM2G2401Z11M</a>                       |       | <a href="#">PDF</a> |                                                       |                                    |                                          |                                                 |                       |                                     |       | 5-pin M12 quick-disconnect (bottom) |
| <a href="#">AEM2G2401Z11MR</a>                      |       | <a href="#">PDF</a> |                                                       | 5-pin M12 quick-disconnect (right) |                                          |                                                 |                       |                                     |       |                                     |
| <a href="#">AEM2G25Z11-3</a>                        |       | <a href="#">PDF</a> | Metal plunger with nylon cross roller and fixing nuts | 0.1                                | 10                                       | 30                                              | Diagram 1             | Cable Out (bottom)                  | I     |                                     |



E



F



G



H



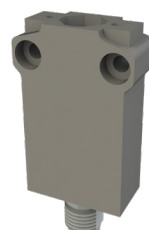
I



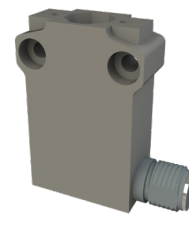
Cable Out (bottom)



Cable Out (right)



5-pin M12 quick-disconnect (bottom)



5-pin M12 quick-disconnect (right)

# Compact Limit Switches

| Compact Limit Switches Specifications                   |                                                                                                                                            |                                                                                                |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Approvals</b>                                        | UL file E191072, CE                                                                                                                        |                                                                                                |
| <b>Environmental</b>                                    |                                                                                                                                            |                                                                                                |
| <b>Degree of Protection</b>                             | IP67 according to IEC 60529                                                                                                                |                                                                                                |
| <b>Temperature Range</b>                                | Storage: -40 to 70°C (-40 to 158°F). Operating: -25 to 70°C (-13 to 158°F)                                                                 |                                                                                                |
| <b>Mechanical Ratings</b>                               |                                                                                                                                            |                                                                                                |
| <b>Mechanical Life</b>                                  | 10 million operations. Models G16, G92, G93: 5 million operations.                                                                         |                                                                                                |
| <b>Enclosure Material</b>                               | ZAMAK (zinc alloy)                                                                                                                         |                                                                                                |
| <b>Contact Blocks Rating</b>                            |                                                                                                                                            |                                                                                                |
| <b>Positive Opening</b>                                 | Yes, except G61, G92, G93                                                                                                                  |                                                                                                |
| <b>Electrical Ratings</b>                               | <b>AC15</b>                                                                                                                                | Make: 100A @ 24VAC; 60A @ 120VAC; 30A @ 240VAC<br>Break: 10A @ 24VAC; 6A @ 120VAC; 3A @ 240VAC |
|                                                         | <b>DC13</b>                                                                                                                                | 2.8 A @ 24VDC; 0.55 A @ 125VDC; 0.27 A @ 250VDC                                                |
| <b>Maximum Switching Frequency</b>                      | Contact blocks: all one cycle per second                                                                                                   |                                                                                                |
| <b>Repeat Accuracy</b>                                  | 0.05 mm on the operating points at 1 million operations                                                                                    |                                                                                                |
| <b>Short-Circuit Protection</b>                         | 10A @ <500V                                                                                                                                |                                                                                                |
| <b>Contact Resistance</b>                               | 25mΩ                                                                                                                                       |                                                                                                |
| <b>Recommended Minimum Operating Speed</b>              | With slow-action contacts: 500mm per minute                                                                                                |                                                                                                |
| <b>Rated Insulation Voltage</b>                         | B300, R300 according to UL508; 400V (degree of pollution: 3) according to IEC 60947-1                                                      |                                                                                                |
| <b>Connection Type</b>                                  | Cable: 3m PVC cable, 5 x 0.75mm <sup>2</sup> (18 AWG). Overall cable diameter: 8.20 mm (0.32 in.)<br>Connector: 5-pin M12 quick-disconnect |                                                                                                |
| <b>Wiring Terminal Markings</b>                         | According to CENELEC EN50013                                                                                                               |                                                                                                |
| <b>Electrical Protection</b>                            | Class I according to IEC60536-1                                                                                                            |                                                                                                |
| <b>Contact Blocks Performance</b>                       |                                                                                                                                            |                                                                                                |
| <b>Operation Frequency</b>                              | 3600 ops/h                                                                                                                                 |                                                                                                |
| <b>Electrical Durability (according to IEC 947-5-1)</b> | Utilization categories AC-15 and DC-13; load factor of 0.5.                                                                                |                                                                                                |
| <b>Torque</b>                                           | All: 0.5 N•m (0.8 Nm max)                                                                                                                  |                                                                                                |

# Compact Limit Switches

## Contacts Configuration

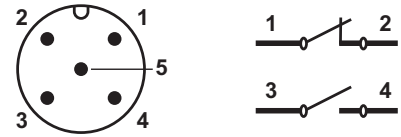
### Limit switch types

**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.

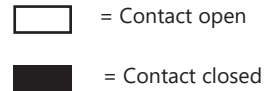
**Slow-make/slow-break contacts:** A contact element in which the contact motion is dependent on the actuator speed.

### Contacts Configuration

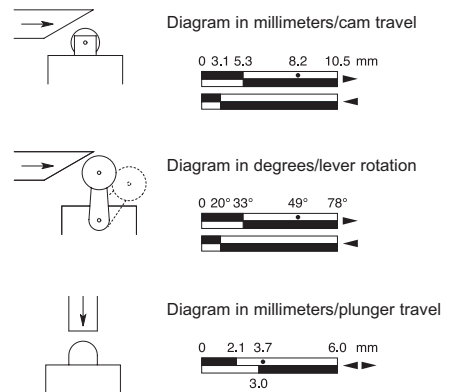
#### 5-Pin M12 connector



Note: Green/yellow wire is physical earth ground.



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

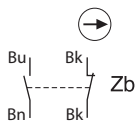


Note: Values represent travel of cam in direction of arrow.

**Diagram 1**

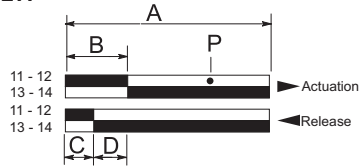
Z11 Snap-action contacts

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

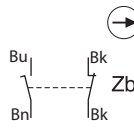
D = Differential travel (between actuation and release)

P = Point from which positive opening is assured during actuation

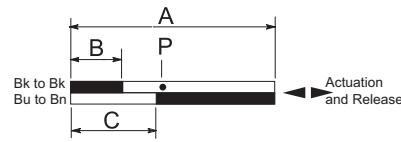
**Diagram 2**

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

| 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°        |                      |