

- **Long life**  
More than  $10^7$  mechanical operations.
- **Great mechanical strength while being compact and lightweight**  
Strong plastic outer cover cap with excellent mechanical characteristics.  
M4 bolt can be used for mounting.
- **The overtravel (O.T.) is large with great shock absorption**
- **Dust-proof and oil resistant**  
Flushed with the diaphragm and the compressed rubber ring  
Conforms to UL/CSA TÜV standards.

## PRODUCT TYPE

### 1. Standard type

| Actuator                         | Part No. |
|----------------------------------|----------|
| Short push plunger               | AZ7100   |
| Push plunger                     | AZ7110   |
| Hinge lever                      | AZ7120   |
| Roller lever                     | AZ7121   |
| One-way roller lever             | AZ7124   |
| Hinge short lever                | AZ7140   |
| Short roller lever               | AZ7141   |
| One-way short roller lever       | AZ7144   |
| Panel mount push plunger         | AZ7310   |
| Panel mount roller plunger       | AZ7311   |
| Panel mount cross roller plunger | AZ7312   |
| Flexible rod                     | AZ7166   |

Note 1. Cadmium free contact types are available on a custom-made basis.  
Please add an "F" to the end of the part number when ordering.

## FOREIGN STANDARDS

| Standards | Applicable product   | Part No.                   |
|-----------|--|----------------------------|
| UL        | File No. : E-122222<br>Ratings : 10A 250V AC<br>Product type : Standard type only    | Order by standard part No. |
| CSA       | File No. : LR55880<br>Ratings : 10A 250V AC<br>Product type : Standard type only     |                            |
| TÜV       | File No. : J9551204<br>Ratings : AC-15 2A/250V~<br>Product type : Standard type only |                            |

## SPECIFICATIONS

### 1. Rating

| Rated control voltage | Load | Resistive load ( $\cos\phi \approx 1$ ) | Inductive load ( $\cos\phi \approx 0.4$ ) | Motor or lamp load |              |
|-----------------------|------|---|---|--------------------|--------------|
|                       |      |   |   | N.C. contact       | N.O. contact |
| 125V AC               |      | 10A                                     | 6A  | 3A                 | 1.5A         |
| 250V AC               |      | 10A                                     | 4A  | 1.5A               | 1A           |
| 115V DC               |      | 0.4A                                    | 0.05A                                     | —                  | —            |

## 2.Characteristics

|  |  |                                 |
|--|--|---------------------------------|
| Contact arrangement                        | 1 Form C   |                                 |
| Initial contact resistance, max.           | 15mΩ* (By voltage drop 6 to 8V DC at rated current)  |                                 |
| Initial insulation resistance (At 500V DC) | Min. 100 mΩ  |                                 |
| Initial breakdown voltage                  | 1,500 Vrms for 1 min between non-consecutive terminals<br>2,000 Vrms for 1 min between dead metal parts and each terminal<br>2,000 Vrms for 1 min between ground and each terminal |                                 |
| Shock resistance                           | In the free position   | Max. 98m/s <sup>2</sup> {10G}   |
|  | In the full operating position   | Max. 294m/s <sup>2</sup> {30G}  |
| Vibration resistance                       | 55 Hz, double amplitude of 1.5 mm  |                                 |
| Expected life (Min. operation)             | Mechanical   | 10 <sup>7</sup> (at 50 cpm)     |
|  | Electrical   | 2 x 10 <sup>5</sup> (at 20 cpm) |
| Ambient temperature/Ambient humidity       | -20 to +60°C -4 to +140°F/Max. 95% R.H. (at 20°C 68°F)   |                                 |
| Max. operating speed                       | 120 cpm  |                                 |

\*The resistance of a copper wire is not included.

## 3.EN60947-5-1 performance

| Item                                   | Rating        |
|--|---------------|
| Rated insulation voltage (Ui)          | 250VAC        |
| Rated impulse withstand voltage (Uimp) | 2.5kV         |
| Switching over voltage                 | 2.5kV         |
| Rated enclosed thermal current (Ithe)  | 10A           |
| Conditional short-circuit current      | 100A          |
| Short-circuit protection device        | 10A fuse      |
| Protective construction                | IP64 (switch) |
| Pollution degree                       | 3             |

## 4. Operating characteristics

| Actuator                         | Characteristics   |                   | Pretravel (P.T.), max.<br>mm inch | Movement Differential (M.D.), max.<br>mm inch | Overtravel (O.T.), min.<br>mm inch | Operating Position (O.P.) mm inch |
|----------------------------------|-------------------|-------------------|-----------------------------------|---|------------------------------------|-----------------------------------|
|                                  | O.F. (N(gf)) max. | R.F. (N(gf)) min. |                                   |   |                                    |                                   |
| Short push plunger               | 5.88 {600}        | 0.98 {100}        | 2.0 .079                          | 0.8 .031                                      | 0.8 .031                           | 30±0.8 1.181±.031                 |
| Push plunger                     | 5.88 {600}        | 0.98 {100}        | 2.0 .079                          | 0.8 .031                                      | 5.0 .197                           | 44±1.2 1.732±.047                 |
| Hinge lever                      | 1.47 {150}        | 0.39 {40}         | 13.5 .531                         | 3.2 .126                                      | 4.0 .157                           | 25±2.0 .984±.079                  |
| Roller lever                     | 1.77 {180}        | 0.49 {50}         | 11.0 .433                         | 2.4 .094                                      | 3.0 .118                           | 40±1.9 1.575±.75                  |
| One-way roller lever             | 1.96 {200}        | 0.59 {60}         | 11.0 .433                         | 2.4 .094                                      | 3.0 .118                           | 50±2.0 1.969±.079                 |
| Hinge short lever                | 2.16 {200}        | 0.59 {60}         | 8.5 .335                          | 2.0 .079                                      | 2.5 .098                           | 25±1.3 .984±.051                  |
| Short roller lever               | 2.35 {240}        | 0.78 {80}         | 6.5 .256                          | 1.5 .059                                      | 2.0 .079                           | 40±1.6 1.575±.063                 |
| One-way short roller lever       | 2.75 {280}        | 0.98 {100}        | 6.5 .256                          | 1.5 .059                                      | 2.0 .079                           | 50±1.6 1.969±.063                 |
| Panel mount push plunger         | 5.88 {600}        | 0.98 {100}        | 2.0 .079                          | 0.8 .031                                      | 6.0 .236                           | 21.8±0.8 .858±.031                |
| Panel mount roller plunger       | 5.88 {600}        | 0.98 {100}        | 2.0 .079                          | 0.8 .031                                      | 6.0 .236                           | 33.3±1.2 1.311±.047               |
| Panel mount cross roller plunger | 5.88 {600}        | 0.98 {100}        | 2.0 .079                          | 0.8 .031                                      | 6.0 .236                           | 33.3±1.2 1.311±.047               |
| Flexible rod                     | 1.18 {120}        | —                 | 25 .984                           | —   | 11 .433                            | 36 1.417 (T.T.)                   |

Note) For the operating characteristics, refer to the TECHNICAL INFORMATION.

## 5. Protective characteristics

| Protective construction | Screw terminal type | Epoxy-sealed terminal type |
|-------------------------|---------------------|----------------------------|
| IEC                     |                     |                            |
| IP60                    | ○                   | ○                          |
| IP64                    | —                   | ○                          |

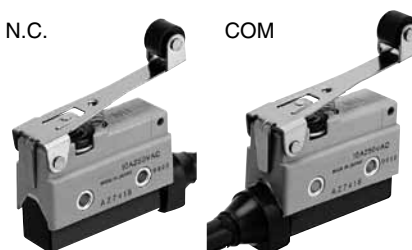
## CAUTIONS

- When the switch is to be used in places where oil or is abundant, bore a drain hole in the bottom of the terminal cover.
- Avoid places where highly acid or alkaline fluids are used or high temperatures prevail.
- Wiring



Standard

- Remove the terminal cover with a ⊖ driver.
- Insert the lead wire through the knock-out of the terminal cover.
- Connect the lead wire to the terminal. When connecting the terminals with the fasten lug, those with the insulation sleeve are recommended.
- The terminal cover can be mounted in both directions.



In this case, fasten the terminal cover in the opposite direction.

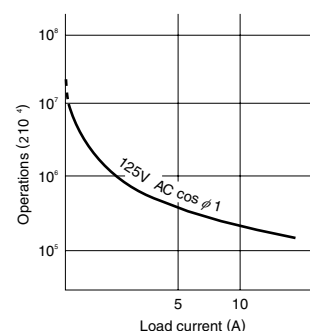
- For epoxy-sealed terminal types, there are two types by the cord outlet direction; N.C. side and COM side.

### 4. Flexible rod type

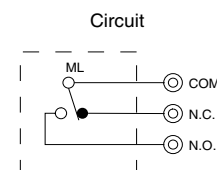
- Put the detective object to the tip of plastic part.
- Avoid pushing the tip of actuating spring in the direction of axis. In the places of oil or water splashes and much dust area, use the limit switch with keeping the actuating spring in the vertical direction.

## DATA

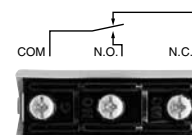
### 1. Life curve



## WIRING DIAGRAM



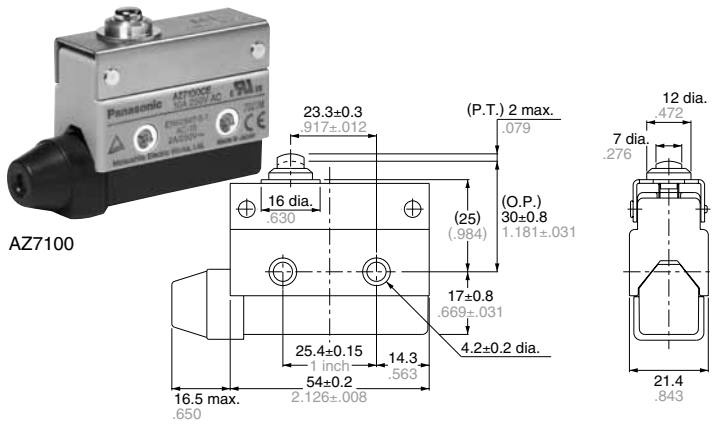
Terminal



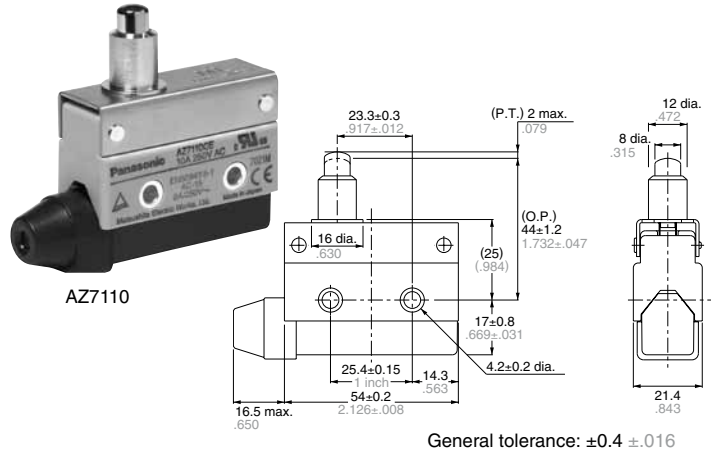
**DIMENSIONS**

mm inch

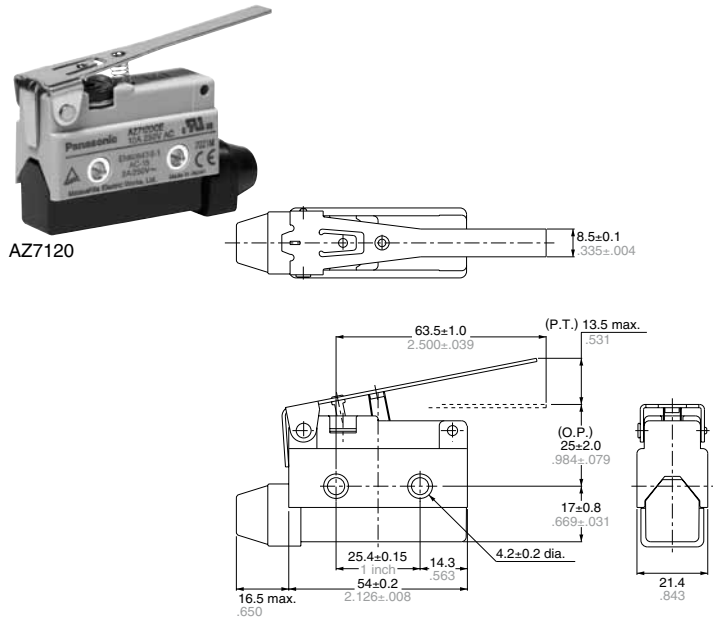
Short push plunger type



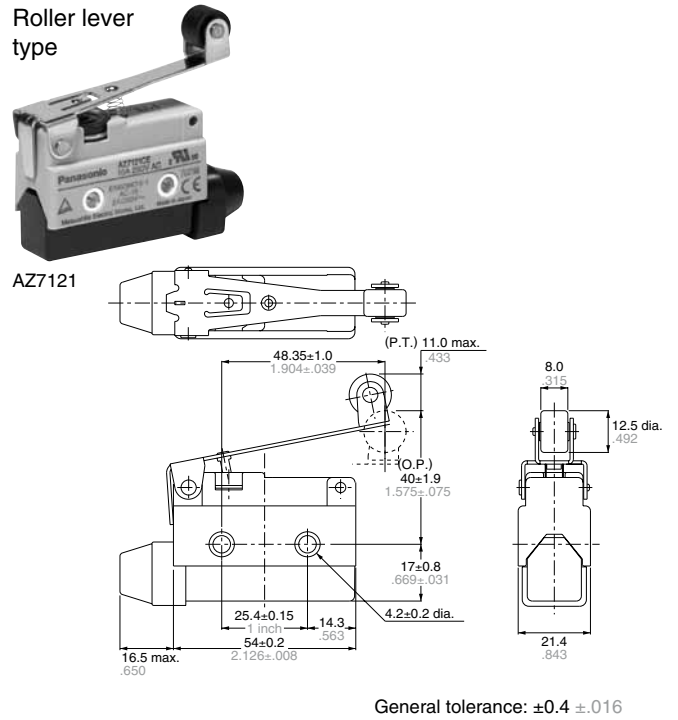
Push plunger type



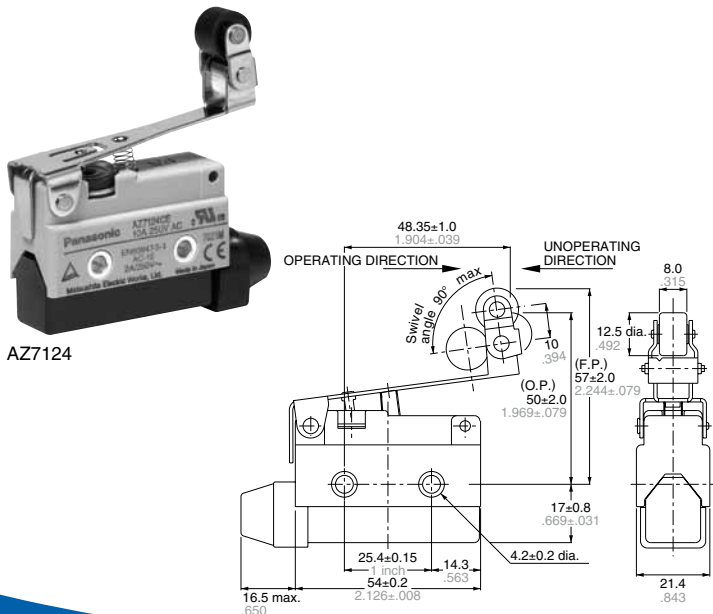
Hinge lever type



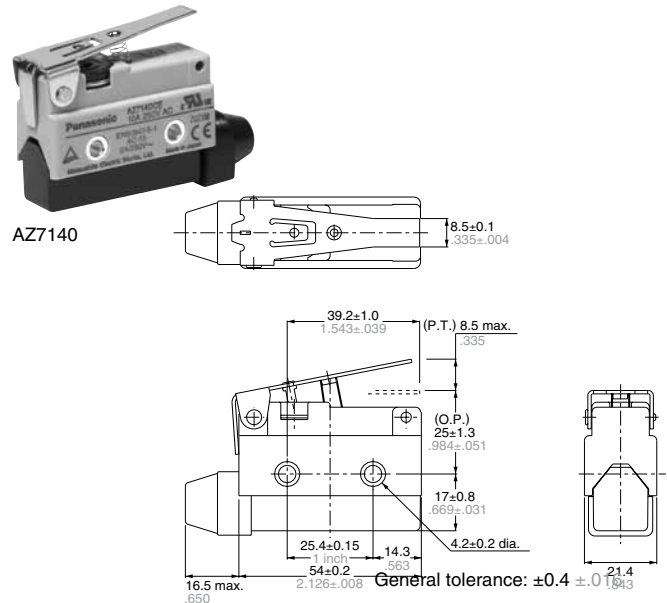
Roller lever type



One-way roller lever type



Hinge short lever type



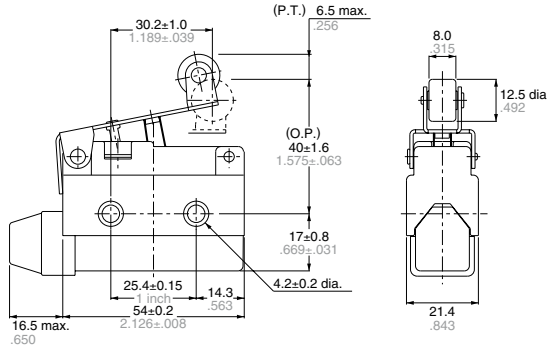
Short roller lever type

One-way short roller lever type

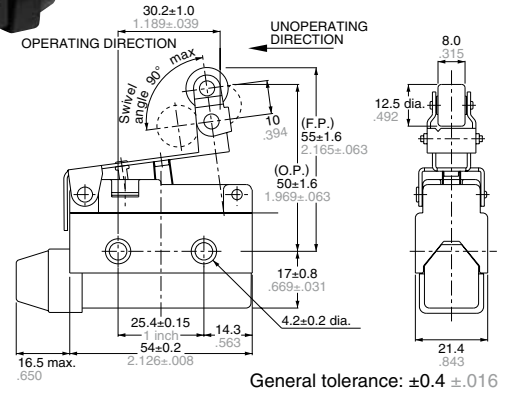
mm inch



AZ7141



AZ7144



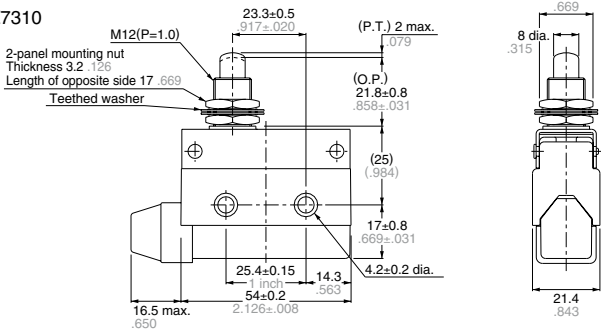
General tolerance: ±0.4 ±.016

Panel mount push plunger type

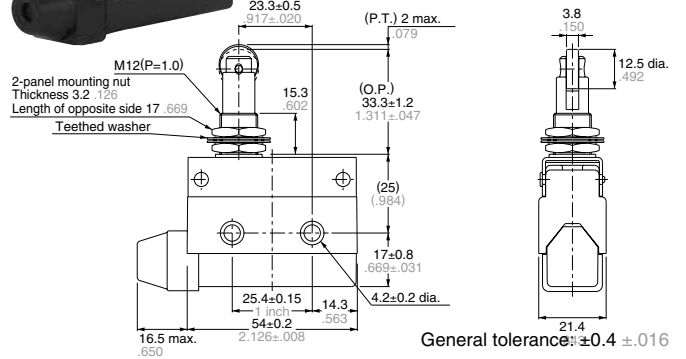
Panel mount roller plunger type



AZ7310



AZ7311



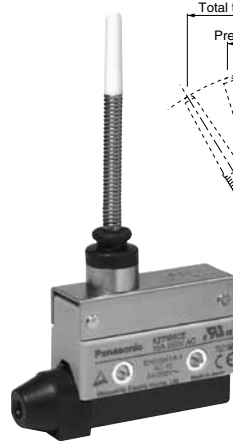
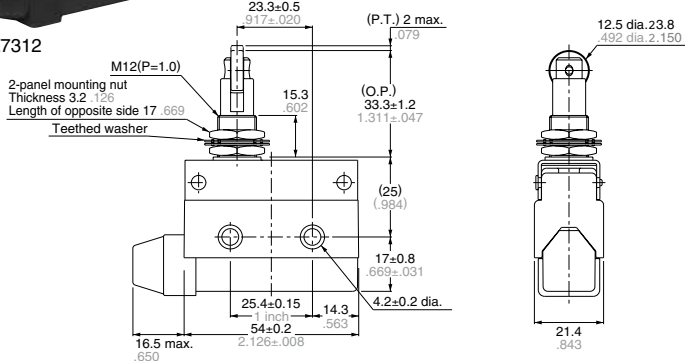
General tolerance: ±0.4 ±.016

Panel mount cross roller plunger type

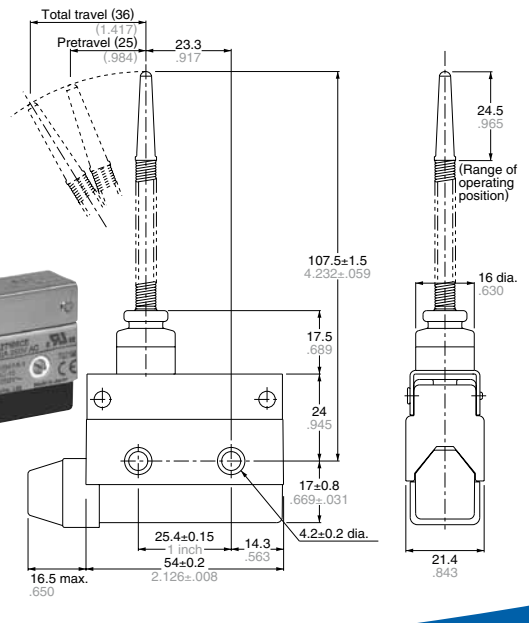
Flexible rod type



AZ7312



AZ7166



General tolerance: ±0.4 ±.016