

MICRO SWITCH EV SERIES

■ FEATURES

- High applicability for general industrial equipment and home appliances
- High precision mechanism design offering durable acute operation and long life
- Heavy/Light operation force specifications
- Three Kinds of terminal available #187 quick connect/solder, #187 quick connect and #250 quick connect type

■ APPLICATIONS

- Home appliances
- Vending machines
- Amusement and communication equipment
- Office automation appliances
- General industrial machines



■ SPECIFICATION

1. ELECTRICAL

| DESCRIPTION | | TYPE | EV-11 | EV-16 | EV-21 |
|-------------------------------|--|------------------------|-----------|-----------|-----------|
| | | Contact Rating: | AC 125V | | 11A 1/2HP |
| AC 250V | | | 11A 1/2HP | 16A 1/2HP | 21A 1/2HP |
| DC 125V | | | 0.6A | 0.6A | 0.6A |
| DC 250V | | | 0.3A | 0.3A | 0.3A |
| Contact Resistance: (Initial) | | 50mΩ Max. | | | |
| Insulation Resistance | | 100 MΩ Min. at 500 VDC | | | |

2. CHARACTERISTICS

| TYPE | | EV-11 | EV-16 | EV-21 |
|---|---|--------------------------------|-----------------|-----------------|
| DESCRIPTION | | | | |
| Mechanical Life (cycles Operations) | | 50,000,000 | | |
| Electrical Life (cycles Operations) | | 300,000 | 100,000 | 100,000 |
| Ambient Temperature (without dew condensation) | | -25°C to +80°C | | |
| Ambient Humidity: | | Max. 85% RH | | |
| Max. operating cycle rate | Mechanical | 600 cycle/min. | | |
| | Electrical | 60 cycle/min. | | |
| Allowable Operation speed (without lever) | | 0.1 to 1,000 mm/sec | | |
| Dielectric Strength | Between non-continuous terminal | AC 1000Vrms | | |
| | Between each terminal and other exposed metal parts | AC 2000Vrms | | |
| | Between each terminal and ground | AC 2000Vrms | | |
| Vibration Resistance (Without lever) | | 10 to 55 Hz amplitude of 1.5mm | | |
| Shock Resistance (Without lever) | | 200m/s{20G}Min. | 300m/s{30G}Min. | 300m/s{30G}Min. |
| Unit weight | | Approx 6.5g | | |

■ PART NUMBERING SYSTEM

EV - XX X X X X XX

XX: Special product number

Operation force: (Without lever)

- 1: 100 gf
- 2: 200 gf
- 3: 400 gf

Actuator type:

- 0: Without lever
- 1: Short straight lever
- 2: Straight lever
- 3: Long straight lever
- 4: Simulated roller lever
- 5: Short roller lever
- 6: Roller lever

Terminal type:

- 1: #187 Quick connect/solder terminal
- 2: #187 Quick connect terminal
- 3: #250 Quick connect terminal

Contact arrangement:

- 1: Bottom COM, SPST-NO (1a)
- 2: Bottom COM, SPST-NC (1b)
- 3: Bottom COM, SPDT (1c)
- 4: Side COM, SPST-NO (1a)
- 5: Side COM, SPST-NC (1b)
- 6: Side COM, SPDT (1c)

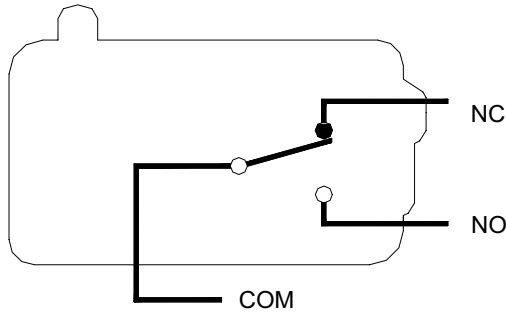
Rating current:

- 11: 11 Ampere
- 16: 16 Ampere
- 21: 21 Ampere

Series name:

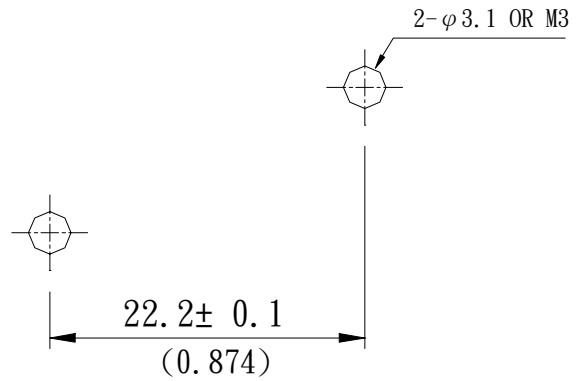
EV: V type micro switch

CIRCUIT DIAGRAM



Unit:mm(inch)

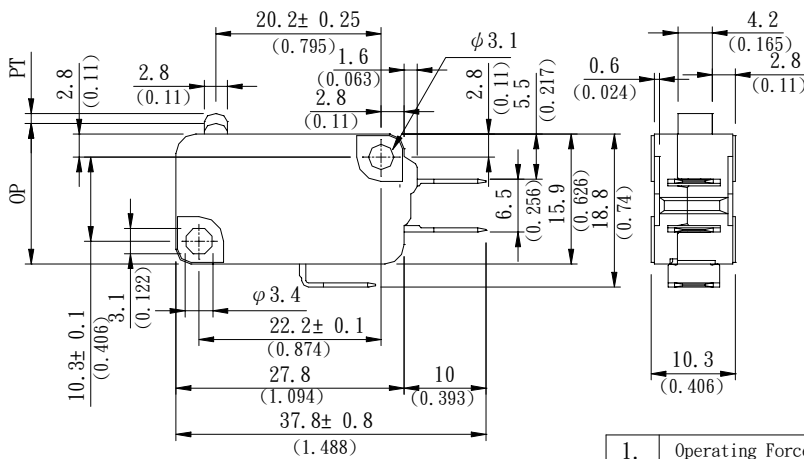
FIX HOLE LAYOUT



EV DIMENSIONS

Unit:mm(inch)

P/N.: EV163102
#187 Quick connect/solder terminal



| | | |
|----|----------------------------|--------------------|
| 1. | Operating Force (OF) | 200gf (1.96N) Max. |
| 2. | Release Force (RF) | 50gf (0.49N) Min. |
| 3. | Pre-travel (PT) | 1.2mm Max. |
| 4. | Overtravel (OT) | 1.0mm Min. |
| 5. | Movement Differential (MD) | 0.4mm Max. |
| 6. | Operation Position (OP) | 14.7 ± 0.4mm |
| 7. | Free Position (FP) | |

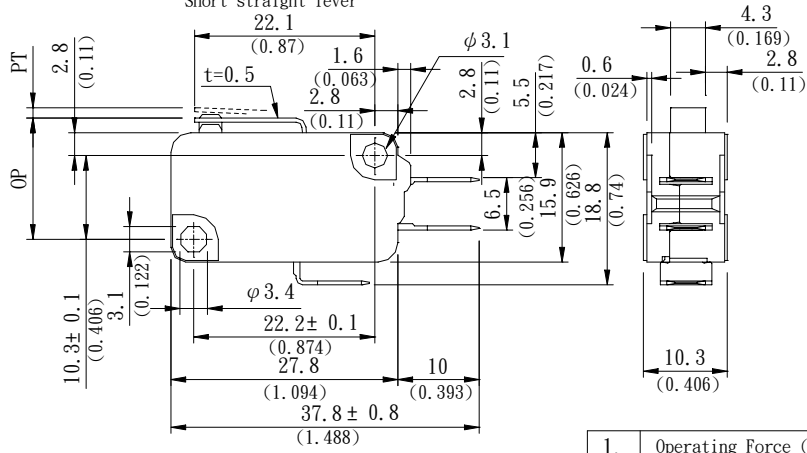
EV DIMENSIONS

Unit:mm(inch)

P/N : EV163112

#187 Quick connect/solder terminal

Short straight lever



| | | |
|----|----------------------------|--------------------|
| 1. | Operating Force (OF) | 200gf (1.96N) Max. |
| 2. | Release Force (RF) | 50gf (0.49N) Min. |
| 3. | Pre-travel (PT) | 1.6mm Max. |
| 4. | Overtravel (OT) | 0.8mm Min. |
| 5. | Movement Differential (MD) | 0.6mm Max. |
| 6. | Operation Position (OP) | 15.2 ± 0.5mm |
| 7. | Free Position (FP) | |

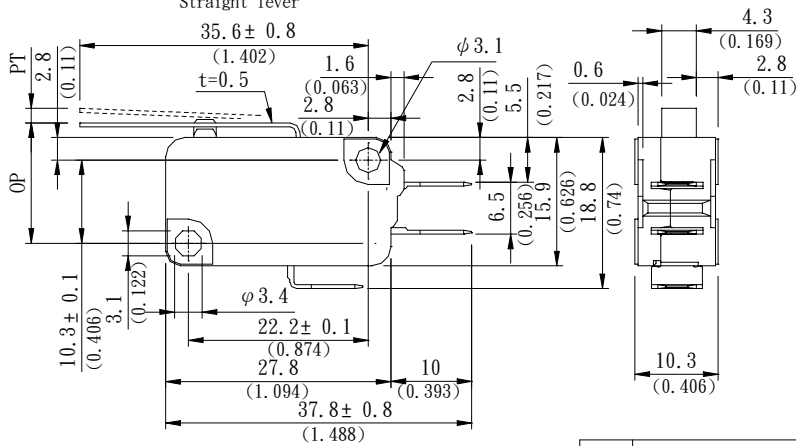
EV DIMENSIONS

Unit:mm(inch)

P/N : EV163122

#187 Quick connect/solder terminal

Straight lever

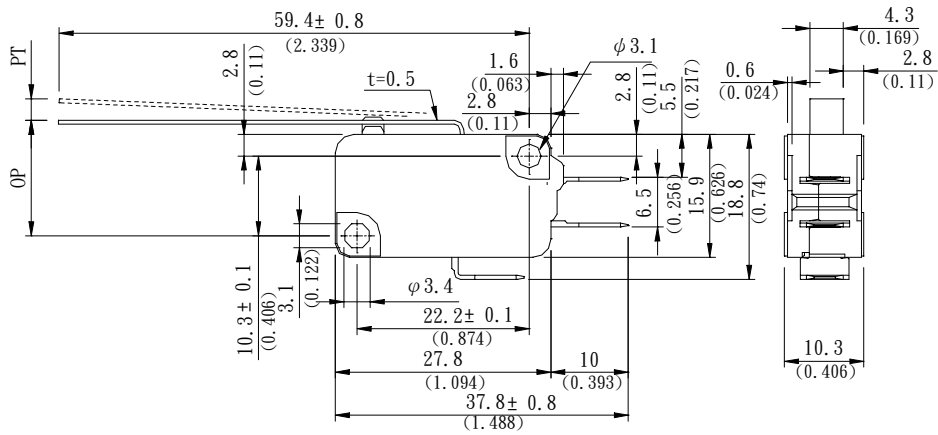


| | | |
|----|----------------------------|--------------------|
| 1. | Operating Force (OF) | 125gf (1.23N) Max. |
| 2. | Release Force (RF) | 14gf (0.14N) Min. |
| 3. | Pre-travel (PT) | 4.0mm Max. |
| 4. | Overtravel (OT) | 1.6mm Min. |
| 5. | Movement Differential (MD) | 1.5mm Max. |
| 6. | Operation Position (OP) | 15.2 ± 1.2mm |
| 7. | Free Position (FP) | |

EV DIMENSIONS

Unit:mm(inch)

P/N.: EV163132
#187 Quick connect/solder terminal
Long straight lever

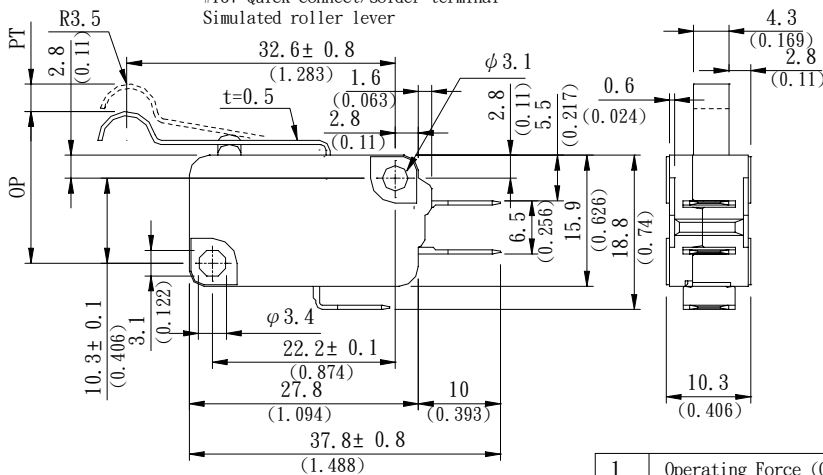


| | | |
|----|----------------------------|---|
| 1. | Operating Force (OF) | 70gf (0.69 N) Max. |
| 2. | Release Force (RF) | 6gf (0.06N) Min. |
| 3. | Pre-travel (PT) | 9.0mm Max. |
| 4. | Overtravel (OT) | 2.0mm Min. |
| 5. | Movement Differential (MD) | 2.8mm Max. |
| 6. | Operation Position (OP) | 15.2 ^{+2.6} _{-3.2} mm |
| 7. | Free Position (FP) | |

EV DIMENSIONS

Unit:mm(inch)

P/N.: EV163142
#187 Quick connect/solder terminal
Simulated roller lever



| | | |
|----|----------------------------|--------------------|
| 1. | Operating Force (OF) | 125gf (1.23N) Max. |
| 2. | Release Force (RF) | 14gf (0.14N) Min. |
| 3. | Pre-travel (PT) | 4.0mm Max. |
| 4. | Overtravel (OT) | 1.6mm Min. |
| 5. | Movement Differential (MD) | 1.5mm Max. |
| 6. | Operation Position (OP) | 18.7 ± 1.2mm |
| 7. | Free Position (FP) | |

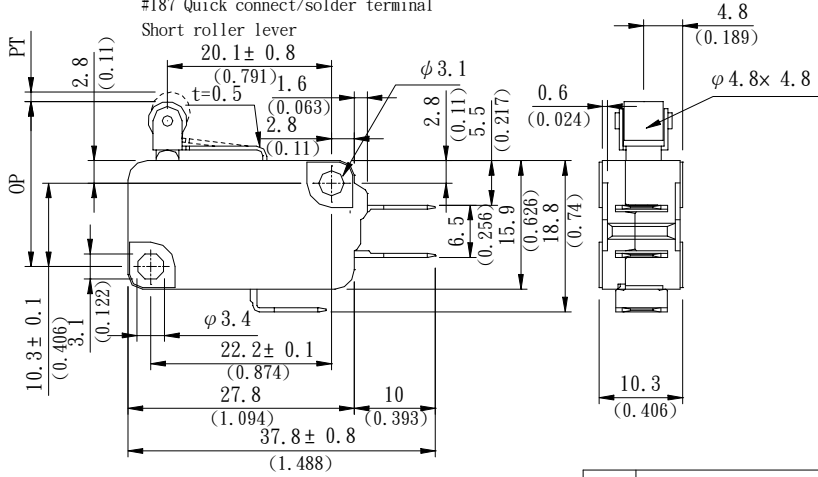
EV DIMENSIONS

Unit:mm(inch)

P/N : EV163152

#187 Quick connect/solder terminal

Short roller lever



| | | |
|----|----------------------------|--------------------|
| 1. | Operating Force (OF) | 240gf (2.35N) Max. |
| 2. | Release Force (RF) | 50gf (0.49N) Min. |
| 3. | Pre-travel (PT) | 1.6mm Max. |
| 4. | Overtravel (OT) | 0.8mm Min. |
| 5. | Movement Differential (MD) | 0.6mm Max. |
| 6. | Operation Position (OP) | 20.7 ± 0.6mm |
| 7. | Free Position (FP) | |

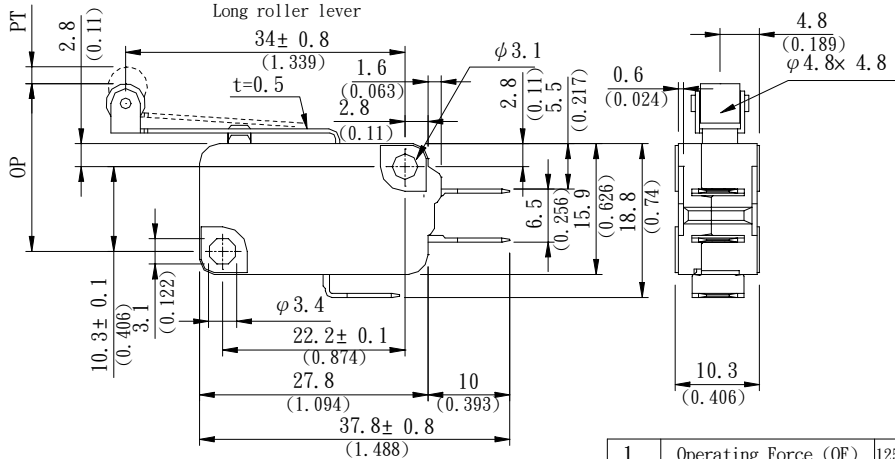
EV DIMENSIONS

Unit:mm(inch)

P/N : EV163162

#187 Quick connect/solder terminal

Long roller lever



| | | |
|----|----------------------------|--------------------|
| 1. | Operating Force (OF) | 125gf (1.23N) Max. |
| 2. | Release Force (RF) | 14gf (0.14N) Min. |
| 3. | Pre-travel (PT) | 4.0mm Max. |
| 4. | Overtravel (OT) | 1.6mm Min. |
| 5. | Movement Differential (MD) | 1.5mm Max. |
| 6. | Operation Position (OP) | 20.7 ± 1.2mm |
| 7. | Free Position (FP) | |