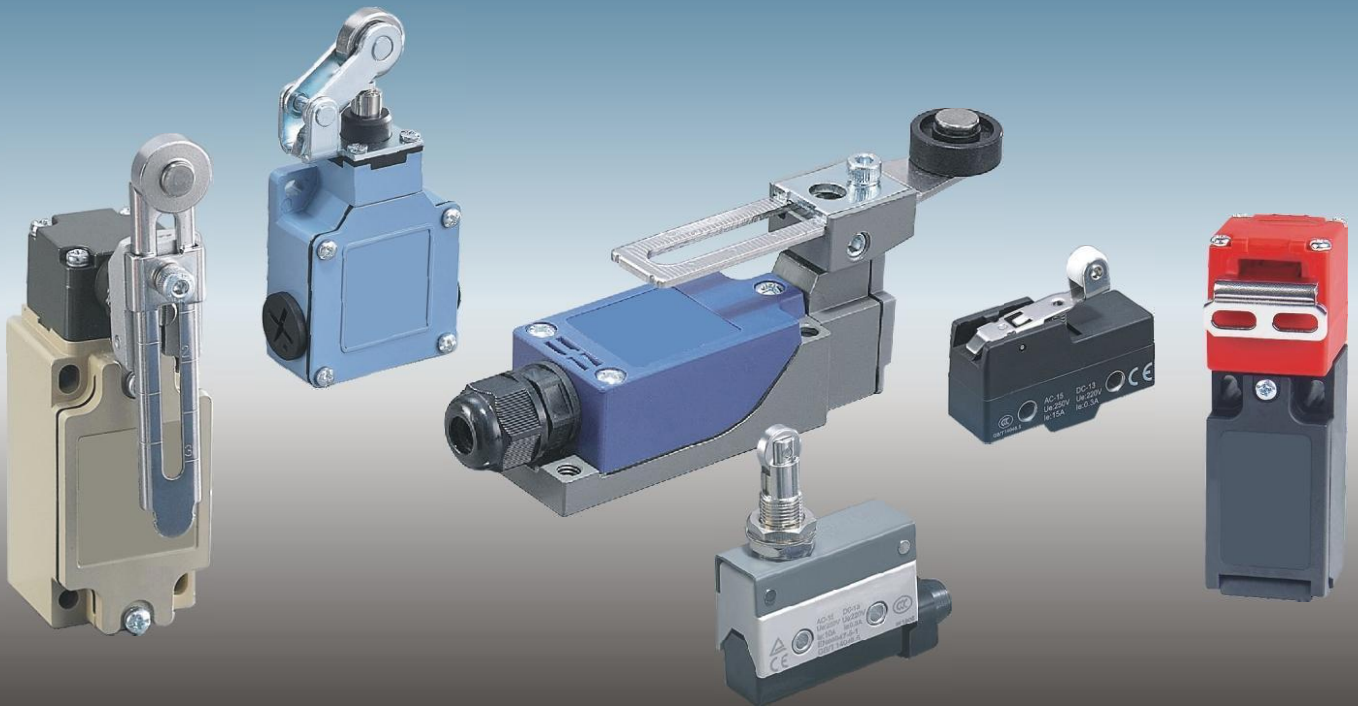


2019 | 2020

# ***SUPAFLEX***

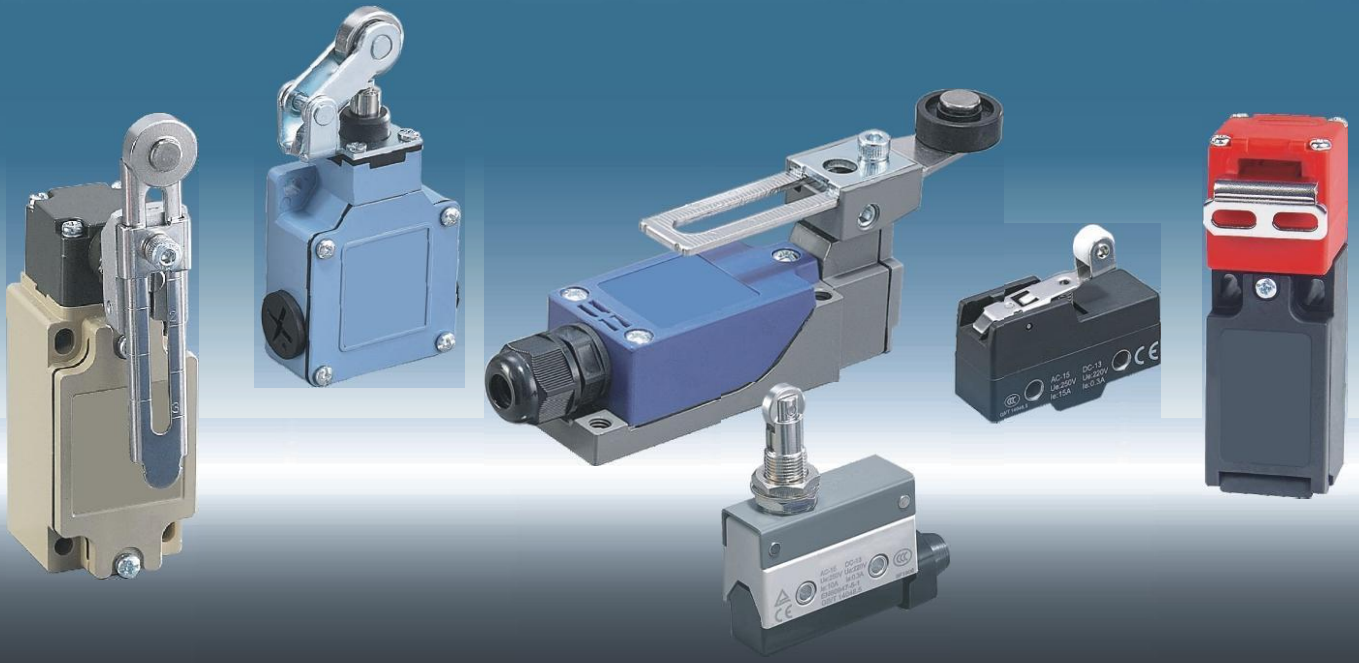
PRODUCT  
CATALOG



## Industrial SWITCHES

| LIMIT SWITCH | MICRO SWITCH | SAFETY KEY INTERLOCK SWITCH





Industrial SWITCHES



***SUPAFLEX***

## Limit Switch 4 Micro Switch

CATALOG



Vertical Limit Switch

SFTZ-8 Vertical Limit Switch	01-02
SFZ-8 <input type="checkbox"/> N Vertical Limit Switch	03-04
SFSA Vertical Limit Switch	05-06
SFWL Vertical Limit Switch	07-09
SFHL Vertical Limit Switch	10-11
SFTZ-6 Horizontal Limit Switch	12-13
SFZ-93 Vertical Interlock Safety Limit Switch	14-15
SFZ-3 Vertical Limit Switch	16-18
SFLS Vertical Limit Switch	19-22
SF4N Vertical Safety Limit Switch	23-27
SF4N <input type="checkbox"/> R Vertical Manual Reset Safety Limit Switch	28-31
SF4B <input type="checkbox"/> N Vertical Safety Limit Switch	32-35



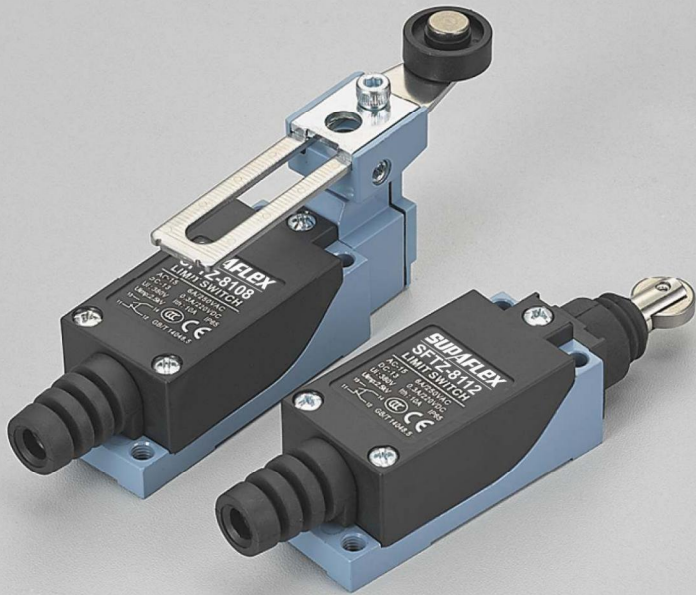
Horizontal Limit Switch

SFM Horizontal Limit Switch	36-39
SFM <input type="checkbox"/> N Horizontal Limit Switch	40-42
SFZ-7 Horizontal Limit Switch	43-44
SFMV-10 Miniature Snap Action Switch	45-46
SFMV-16 Miniature Snap Action Switch	47-48



**Product Launch**

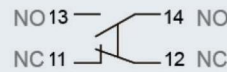




### Features

- Double circuit type of limit switch
- High mechanical strength, consists of intensive plastic and aluminum cast
- Small size, water-proof and oil-proof construction
- Built-in contact box has double-spring and long mechanical life
- Smooth operation with larger over travel distance
- Conduit design for convenient cabling
- Various actuators for different applications

### Contact Form



### Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
Inrush Current	N.C: below 24A, N.O: below 12A							

NOTES: 1. Inductive load has a power factor of 0.4 min.(AC) and a time constant of 7 msec. max.(DC).  
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.  
 3. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

### Operating Characteristics

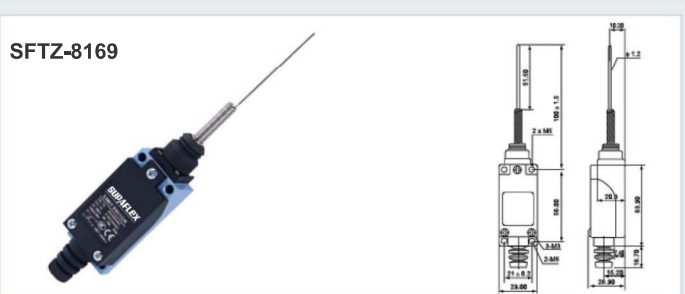
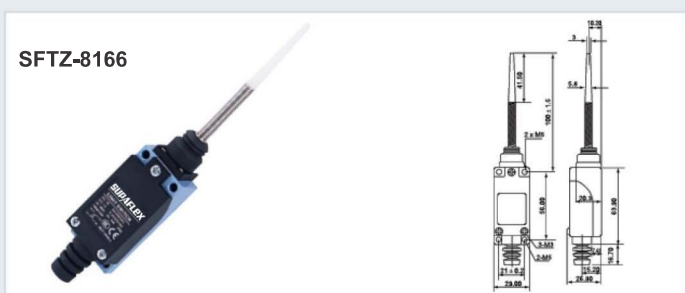
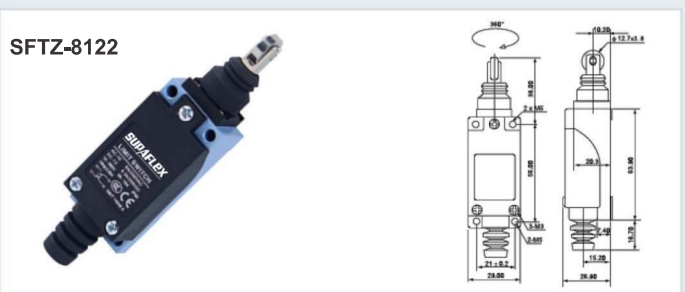
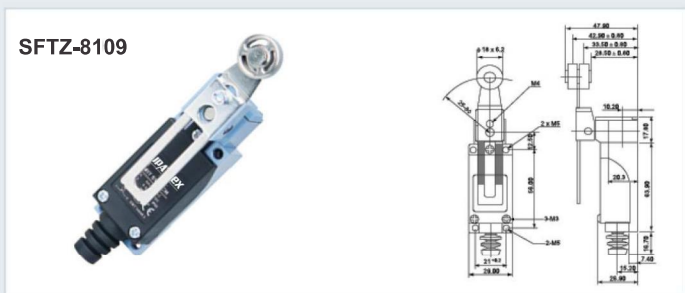
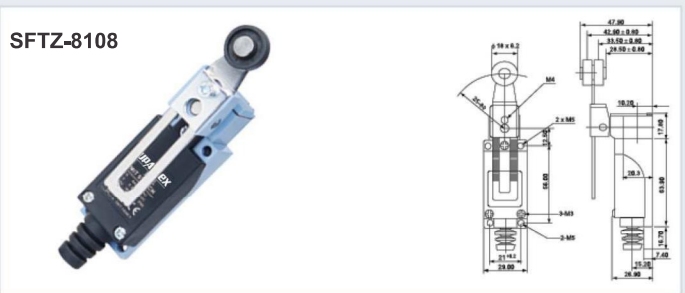
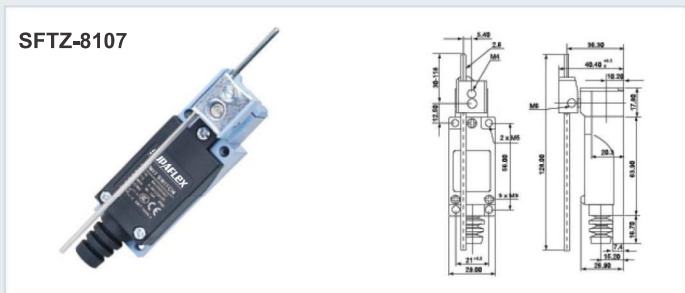
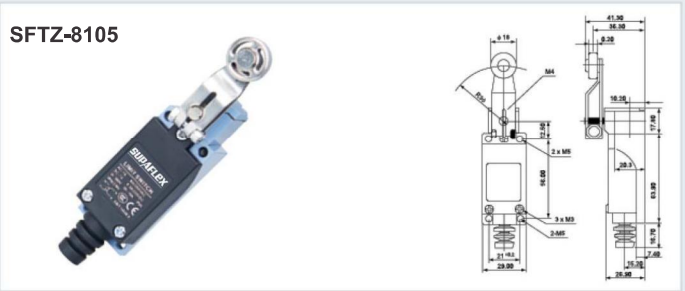
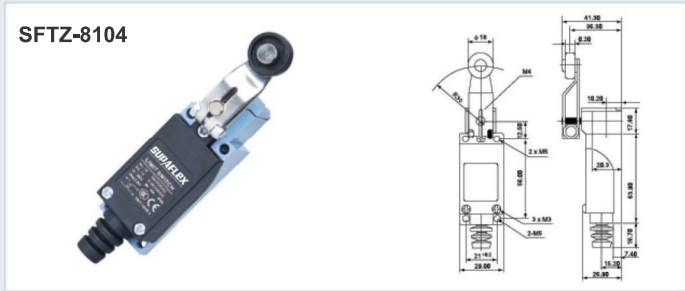
Model	SFTZ-8	SFTZ-8104 SFTZ-8105	SFTZ-8108 SFTZ-8109	SFTZ-8107	SFTZ-8111	SFTZ-8112/8122	SFTZ-8166/8167/8168/8169
Operating force	OF (Max.)	750g	750g	750g	900g	900g	150g
Release force	RF (Min.)	100g	100g	100g	150g	150g	-
Pre-travel	PT (Max.)	20°	20°	20°	1.5mm	1.5mm	30mm
Over travel	OT (Min.)	50°	50°	50°	4mm	4mm	-
Movement differential	MD (Max.)	12°	12°	12°	1mm	1mm	-
Operating position	OP(mm.)	-	-	-	26 ± 0.8mm	37 ± 0.8mm	-

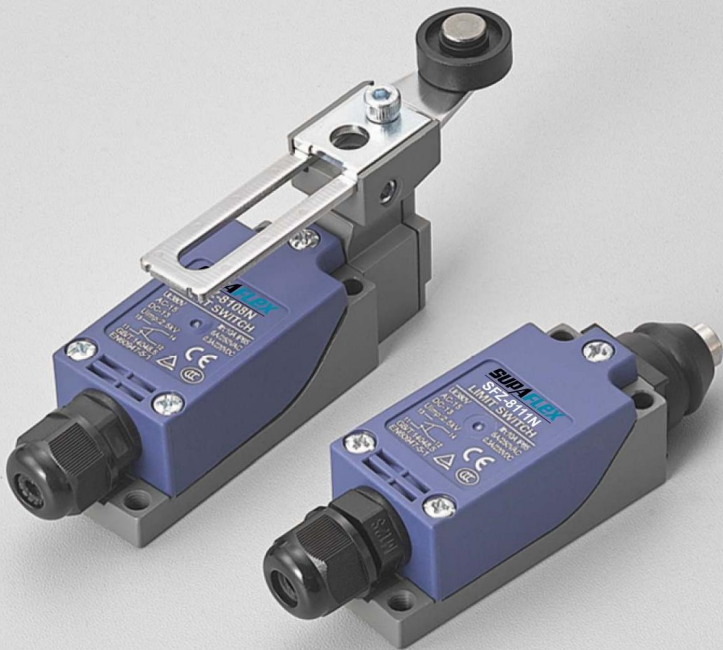
### Specifications

Operation speed	5mm-0.5m/s
Operating frequency	Electrical: 30 operations/min
Contact resistance	25mΩ max. (initial value)
Insulation resistance	100mΩ min. (below 500VDC)
Dielectric strength	1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
Vibration	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
	10-55Hz, 1.5mm double amplitude
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S) Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+70°C (With no icing)
Humidity	<95% RH
Electrical life	500,000 operations above
Degree of protection	IP65



## Appearance and Dimension





### Features

- Double circuit type of limit switch
- High mechanical strength, consists of intensive plastic and aluminum cast
- Small size, water-proof and oil proof construction
- Built-in contact box has double-spring and long mechanical life
- Smooth operation with larger over travel distance
- Various actuators for different application
- Optimize tail line design to improve sealing performance

### Contact Form



### Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
Inrush Current	N.C: below 24A, N.O: below 12A							

NOTES: 1. Inductive load has a power factor of 0.4 min.(AC) and a time constant of 7 msec. max.(DC).  
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.  
 3. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

### Specifications

Operation speed	5mm-0.5m/s
Operating frequency	Electical: 30 operations/min
Contact resistance	25mΩ max. (initial value)
Insulation resistance	100mΩ min. (below 500VDC)
Dielectric strength	1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
Vibration	10-55Hz, 1.5mm double amplitude
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S) Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+70°C (With no icing)
Humidity	<95% RH
Electrical life	500,000 operations above
Degree of protection	IP65

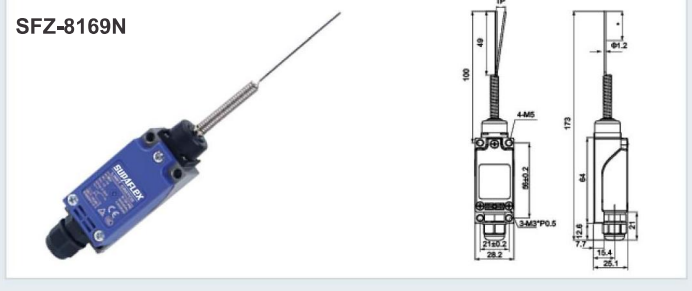
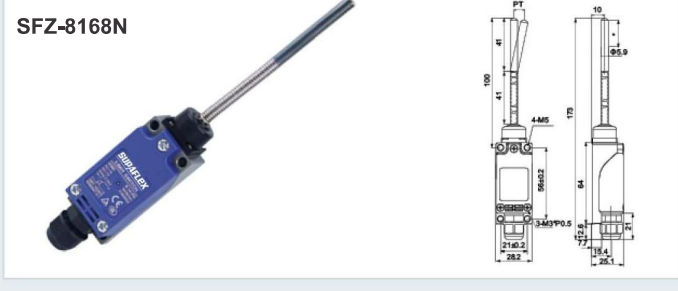
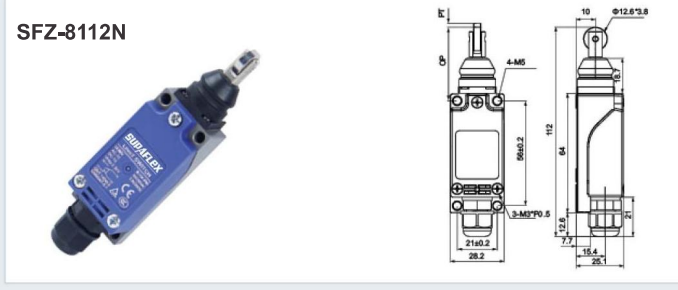
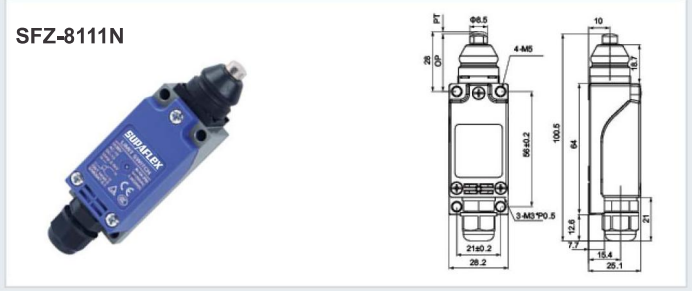
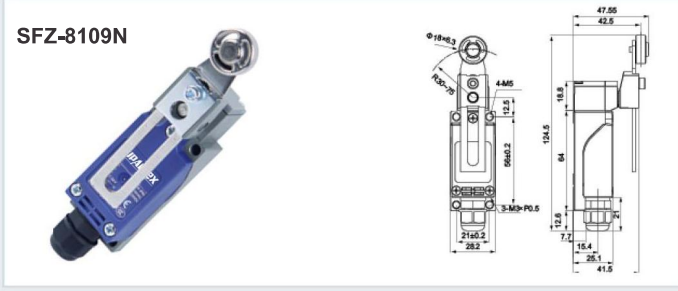
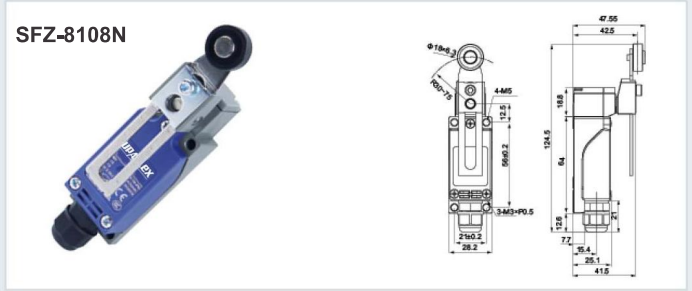
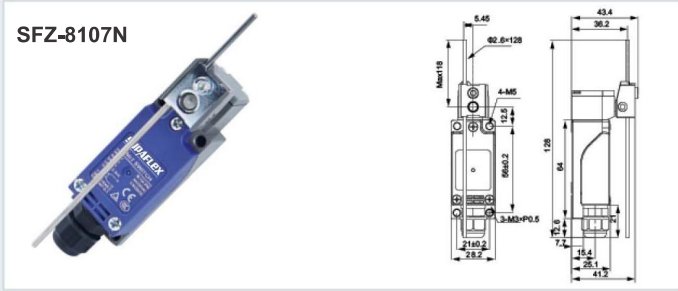
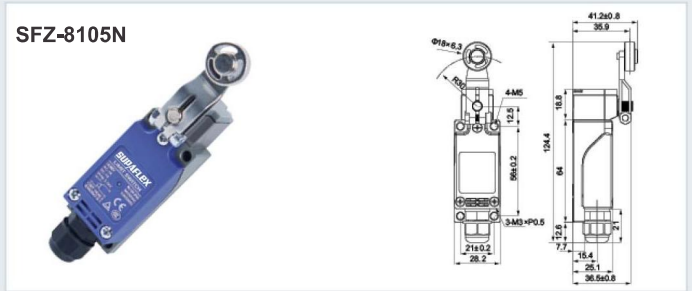
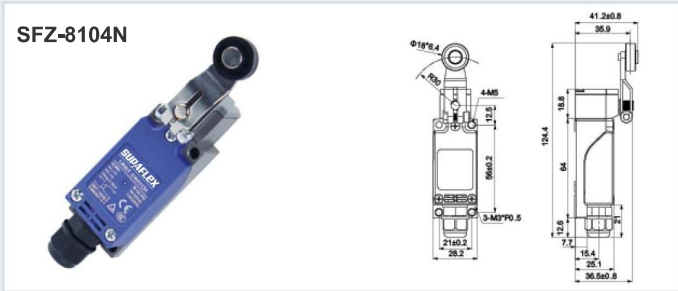
### Operating Characteristics

Model	SFZ-8□N	SFZ-8104N SFZ-8105N	SFZ-8108N SFZ-8109N	SFZ-8107N	SFZ-8111N	SFZ-8112N SFZ-8122N	SFZ-8166N/8167N/8168N/8169N
Operating force	OF (Max.)	750g	750g	750g	900g	900g	150g
Release force	RF (Min.)	100g	100g	100g	150g	150g	-
Pre-travel	PT (Max.)	20°	20°	20°	1.5mm	1.5mm	30mm
Over travel	OT (Min.)	50°	50°	50°	4mm	4mm	-
Movement differential	MD (Max.)	12°	12°	12°	1mm	1mm	-
Operating position	OP(mm.)	-	-	-	26 ± 0.8mm	37 ± 0.8mm	-

# SFZ-8□N Vertical Limit Switch



## Appearance and Dimension

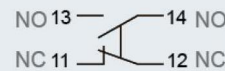




### Features

- Double circuit type of limit switch
- High mechanical strength, consists of intensive plastic and aluminum cast
- Water-proof and oil proof construction
- Built-in contact box has double-spring and long mechanical life
- Smooth operation with larger over travel distance
- Various actuators for different application

### Contact Form



### Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
Inrush Current	N.C: below 24A, N.O: below 12A							

NOTES: 1. Inductive load has a power factor of 0.4 min.(AC) and a time constant of 7 msec. max.(DC).  
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.  
 3. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

### Operating Characteristics

Model	SFSA	SFSA-001	SFSA-003	SFSA-012	SFSA-012	SFSA-041	SFSA-031 SFSA-031M	SFSA-051	SFSA-061	SFSA-071	SFSA-081
Operating force	OF (Max.)	800g	800g	800g	400g	400g	400g	400g	150g	150g	150g
Release force	RF (Min.)	400g	400g	400g	100g	100g	100g	100g	50g	50g	50g
Pre-travel	PT (Max.)	1.8mm	1.8mm	1.8mm	20°	20°	20°	20°	30mm	30mm	30mm
Tripping position	TP ± 10%	2.0mm	2.0mm	2.0mm	22.5°	22.5°	22.5°	22.5°	22.5°	22.5°	22.5°
Movement differential	MD (Max.)	1.2mm	1.2mm	1.2mm	10°	10°	10°	10°	14°	14°	14°
Over travel	OT (Min.)	4.0mm	4.0mm	4.0mm	75°	75°	75°	75°	20mm	20mm	20mm
Total travel	TT (Min.)	5.8mm	5.8mm	5.8mm	95°	95°	95°	95°	50mm	50mm	50mm
Rotary indexing					22.5°	22.5°	22.5°	22.5°			

### Specifications

Operation speed	5mm-0.5m/s
Operating frequency	Electical: 30 operations/min
Contact resistance	25mΩ max. (initial value)
Insulation resistance	100mΩ min. (below 500VDC)
Dielectric strength	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
Vibration	10-55Hz, 1.5mm double amplitude
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S)
	Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+70°C (With no icing)
Humidity	<95% RH
Electrical life	500,000 operations above
Protection level	<b>IP66</b>





## Appearance and Dimension

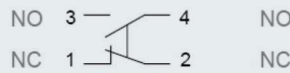
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<p><b>SFSA-031</b></p>	<p><b>SFSA-031M</b></p>
<p><b>SFSA-012</b></p>	<p><b>SFSA-041</b></p>
<p><b>SFSA-051</b></p>	<p><b>SFSA-061</b></p>
<p><b>SFSA-071</b></p>	<p><b>SFSA-081</b></p>



### Features

- Double-circuit type of limit switch
- High mechanical strength, mainly consists of aluminum cast
- Water-proof and oil-proof construction
- Various actuators for different applications
- Built-in contact box with double spring mechanism, longer mechanical life

### Contact Form



### Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	10	3	1.5	10	5	2.0		
250VAC	5	2	1	5	3	1.0		
480VAC	3	1.5	0.8	3	1.5	0.8		
600VAC	1	1	0.5	1.5	1	0.5		
8VDC	10	6	3	10	6			
14VDC	10	6	3	10	6			
30VDC	6	4	3	6	4			
125VDC	0.8	0.2	0.2	0.8	0.2			
250VDC	0.4	0.1	0.1	0.4	0.1			

NOTES: 1. Inductive load has a power factor of 0.4 min.(AC) and a time constant of 7 msec. max.(DC).  
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.  
 3. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

### Specifications

Operation speed	1mm-1m/s
Operating frequency	Electrical: 30 operations/min
Contact resistance	25mΩ max. (initial value)
Insulation resistance	100mΩ min. (below 500VDC)
Dielectric strength	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
Vibration	10-55Hz, 1.5mm double amplitude
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S)
	Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+80°C (With no icing)
Humidity	<95% RH
Electrical life	500,000 operations above
Protection level	IP66

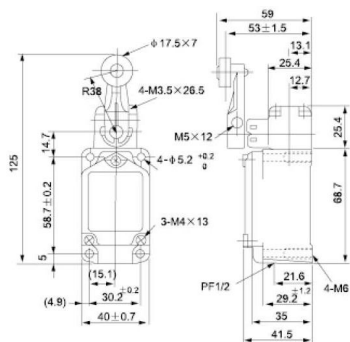
NOTES: The default size of conduit connector is M20x1.5, outfitting cable connector. Conduit connector size is PG13.5, with product model number plus (-P), example: SFWLCA2-2-P

### 动作特性 Operating Characteristics

Model	SFWL	SFWLCA2-2	SFWLD2	SFWLNJ	SFWLNJ-S2	SFWLCA12-2-Q SFWLCA12-2-QD	SFWLCL	SFWLCA21-41 SFWLCA31-42	SFWLD	SFWLDNJ-2	SFWLDNJ-30	SFWLD1	SFWLD3
Operating Force	OF (Max.)	1360g	2720g	150g	29g	1360g	142g	1200g	2720g	120g	80g	2720g	2720g
Release Force	RF (Min.)	227g	910g	-	-	227g	28g	-	910g	-	-	910g	910g
Pre-Travel	PT (Max.)	20°	1.7mm	28mm	28mm	20°	20°	550	1.7mm	28mm	28mm	1.7mm	1.7mm
Over Travel	OT (Min.)	30°	5.6mm	-	-	30°	30°	350	6.4mm	-	-	5.6mm	5.6mm
Movement													
Differential	MD (Max.)	12°	1mm	-	-	12°	12°	-	1mm	-	-	1mm	1mm
Total Force	TF (Max.)	2720g	-	-	-	2720g	200g	-	-	-	-	2720g	2720g
Total Travel	TT (Min.)	50°	6.5±0.8mm	-	-	50°	50°	OP:90±10o	OP:34±2.8mm	-	-	6.5±0.8mm	9±0.8mm

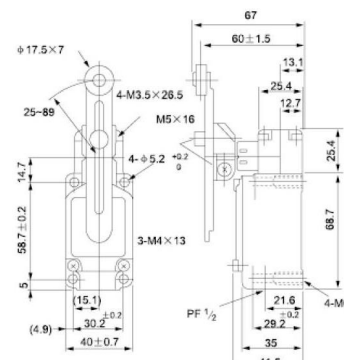
## Appearance and Dimension

**SFWLCA2-2**



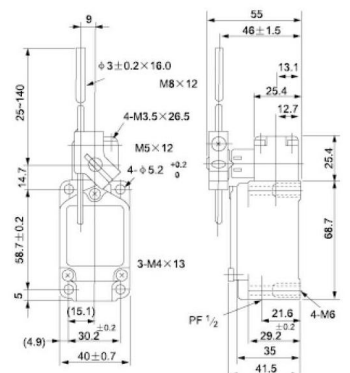
可选配塑胶滚轮  
Optional plastic idler wheel

**SFWLCA12-2-Q**

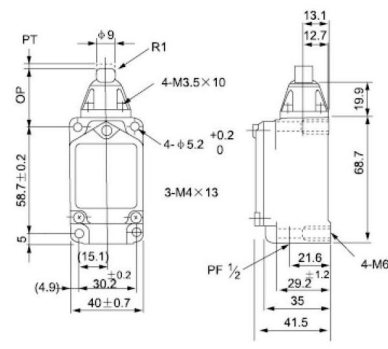


可选配塑胶滚轮  
Optional plastic idler wheel

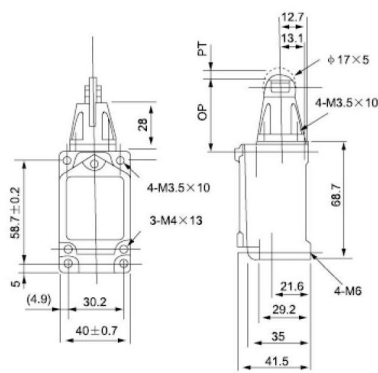
**SFWLCL**



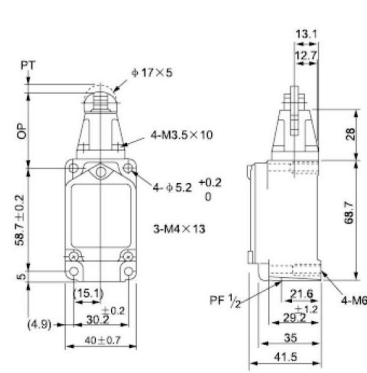
**SFWLD**



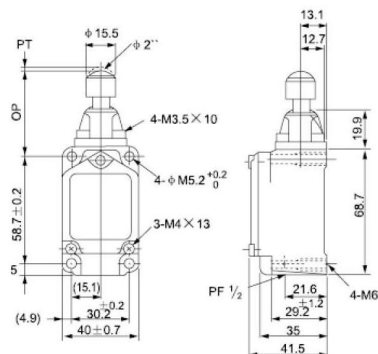
**SFWLD1**



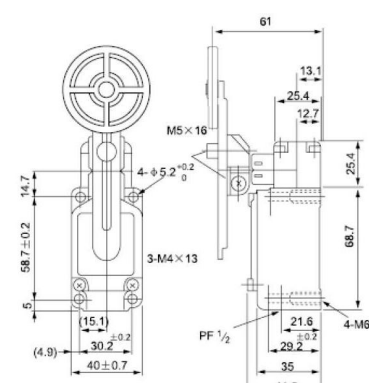
**SFWLD2**



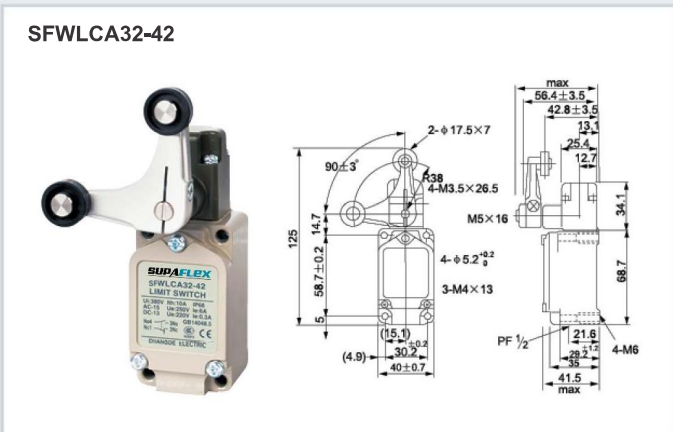
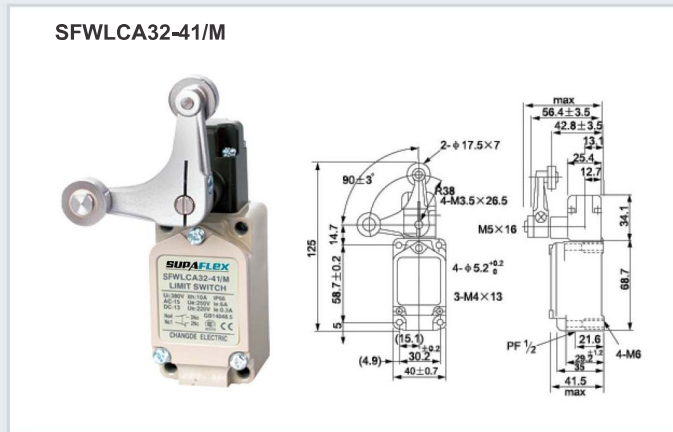
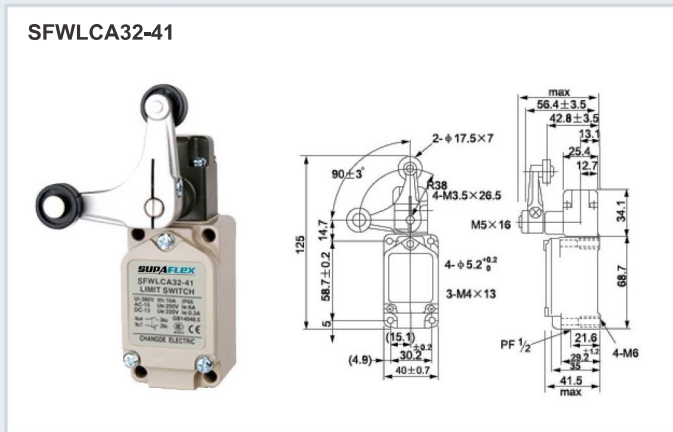
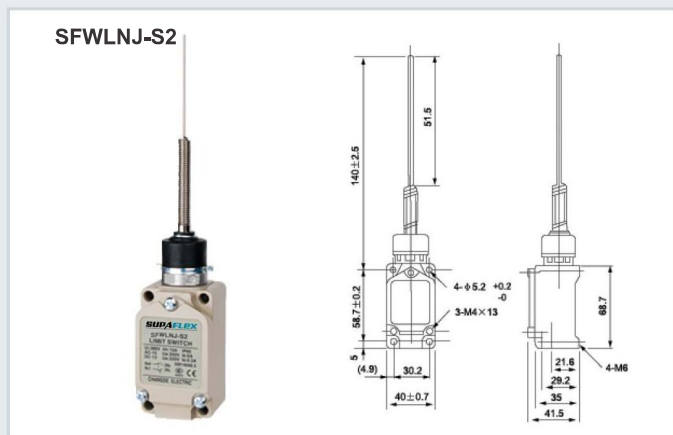
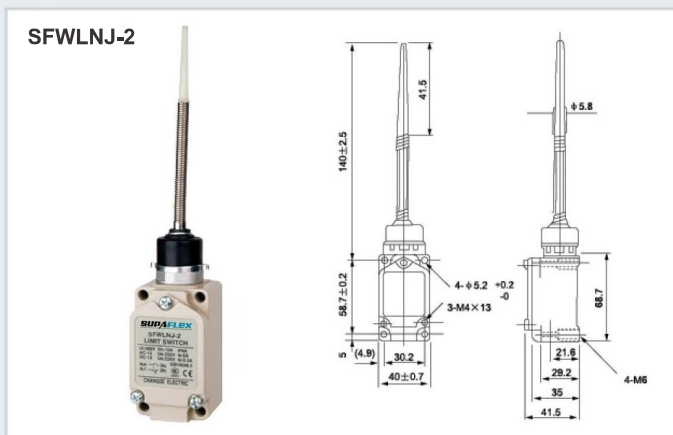
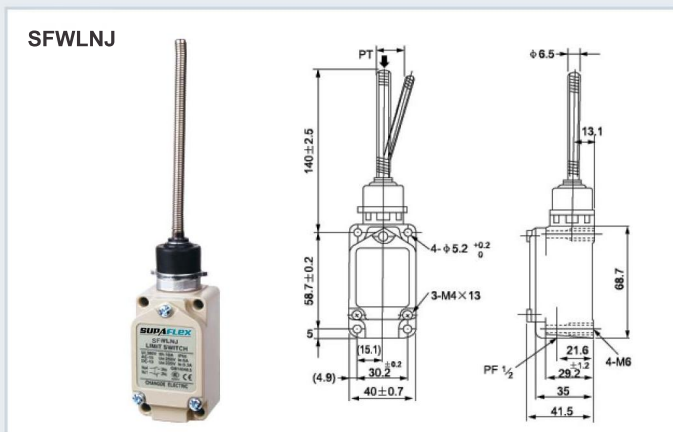
**SFWLD3**



**SFWLCA12-2-QD**



## Appearance and Dimension





## Features

- Various actuators for different applications
- Conduit design for convenient cabling
- Metal shell with high mechanical strength
- Built-in contact box has double-spring and long mechanical life

## Contact Form



## Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
Inrush Current	N.C: below 24A, N.O: below 12A							

NOTES: 1. Inductive load has a power factor of 0.4 min.(AC) and a time constant of 7 msec. max.(DC).  
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.  
 3. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

## Operating Characteristics

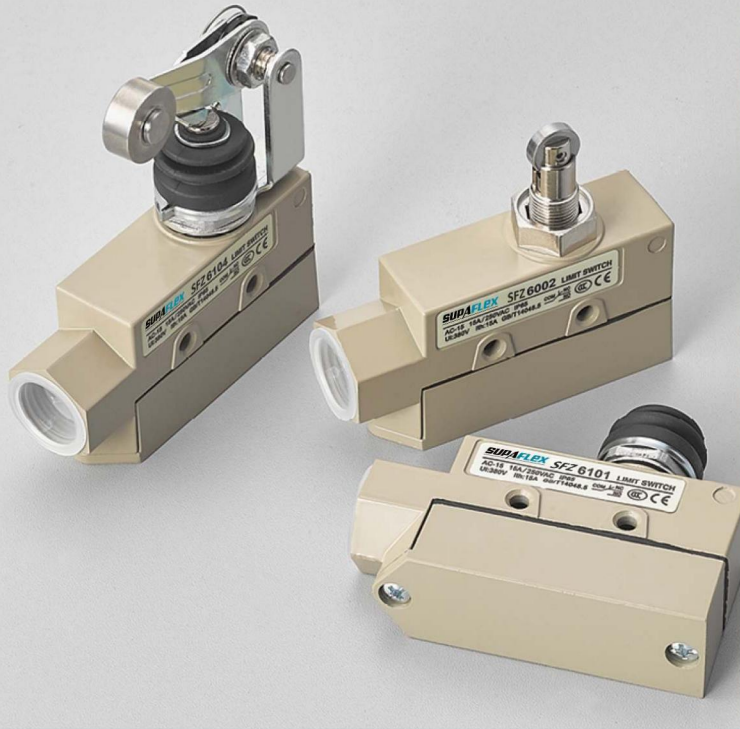
Model	SFHL	SFHL-5000	SFHL-5030	SFHL-5050	SFHL-5100	SFHL-5200	SFHL-5220	SFHL-5300	SFHL-5330	SFHL-5381	SFHL-5391
Operating force	OF (Max.)	750g	750g	750g	750g	900g	900g	150g	150g	150g	550g
Release force	RF (Min.)	100g	100g	100g	200g	200g	200g	30g	30g	30g	100g
Pre-travel	PT (Max.)	20°	20°	20°	1.8mm	1.8mm	1.8mm	30mm	30mm	30mm	20°
Tripping position	TP ± 10%	22.5°	22.5°	22.5°	2.0mm	2.0mm	2.0mm	22.5°	22.5°	22.5°	22.5°
Movement differential	MD (Max.)	10°	10°	10°	1.2mm	1.2mm	1.2mm	14°	14°	14°	14°
Over travel	OT (Min.)	75°	75°	75°	4.0mm	4.0mm	4.0mm	20mm	20mm	20mm	75°
Total travel	TT (Min.)	95°	95°	95°	5.8mm	5.8mm	5.8mm	50mm	50mm	50mm	95°

## Specifications

Operation speed	5mm-0.5m/s
Operating frequency	Electical: 30 operations/min
Contact resistance	25mΩ max. (initial value)
Insulation resistance	100mΩ min. (below 500VDC)
Dielectric strength	1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
Vibration	10-55Hz, 1.5mm double amplitude
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S) Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+70°C (With no icing)
Humidity	<95% RH
Electrical life	500,000 operations above
Protection level	<b>IP65</b>



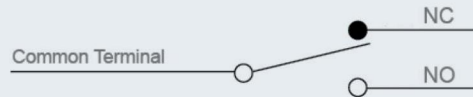
# SFZ-6 Horizontal Limit Switch



## Features

- Built-in CM horizontal limit switch
- High mechanical strength, mainly consists of aluminum cast
- Water-proof and oil-proof construction
- Same rated value and characteristic with CM horizontal limit switch
- Various actuators for different applications

## Contact Form



## Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
Inrush Current	N.C: below 24A, N.O: below 12A							

NOTES: 1. Inductive load has a power factor of 0.4 min.(AC) and a time constant of 7 msec. max.(DC).  
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.  
 3. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

## Operating Characteristics

Model	SFZ-6	SFZ-6001	SFZ-6002	SFZ-6003	SFZ-6004	SFZ-6043	SFZ-6101	SFZ-6102	SFZ-6103	SFZ-6104	SFZ-6143
Operating force	OF (Max.)	250~350g	250~350g		570g	570g	800g	500g		640g	640g
Release force	RF (Min.)	114g	114g		170g	170g	240g	100g		230g	230g
Pre-travel	PT (Max.)	0.4mm	0.5mm		4mm	4mm	2mm	1mm		5mm	5mm
Movement differential	MD (Max.)	0.05mm	0.05mm		0.4mm	0.4mm	0.1mm	0.12mm		0.4mm	0.4mm
Over travel	OT (Min.)	5.5mm	3.6mm		6mm	6mm	5mm	3.5mm		6mm	6mm
Operating Position	OP(mm.)	38.2 ± 0.8mm	49.7 ± 1mm				45.8 ± 0.8mm	49.7 ± 0.8mm			

## Specifications

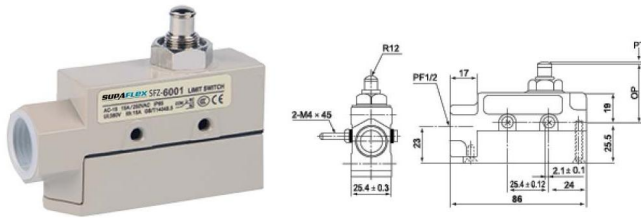
Operation speed	5mm-0.5m/s
Operating frequency	Electrical: 20 operations/min
Contact resistance	25mΩ max. (initial value)
Insulation resistance	100mΩ min. (below 500VDC)
Dielectric strength	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
Vibration	10-55Hz, 1.5mm double amplitude
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S)
	Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+80°C (With no icing)
Humidity	<95% RH
Electrical life	500,000 operations above
Protection level	IP66

NOTES: The default size of conduit connector is M20x1.5, outfitting cable connector. Conduit connector size is PG13.5, with product model number plus (-P), example: SFZ-6104-P.

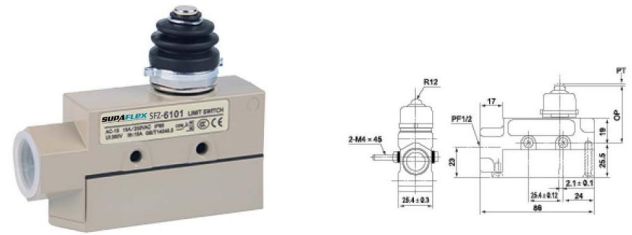
# SFZ-6 Horizontal Limit Switch

## Appearance and Dimension

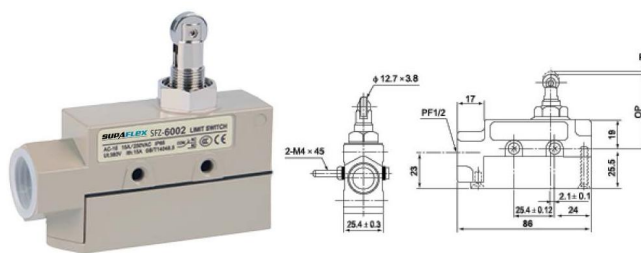
SFZ-6001



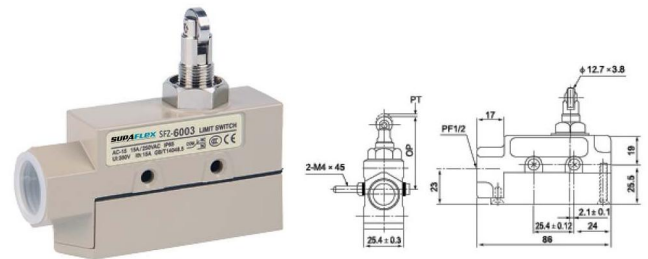
SFZ-6101



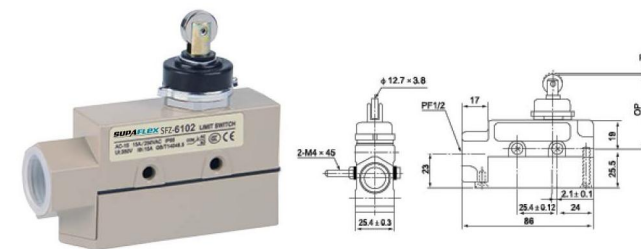
SFZ-6002



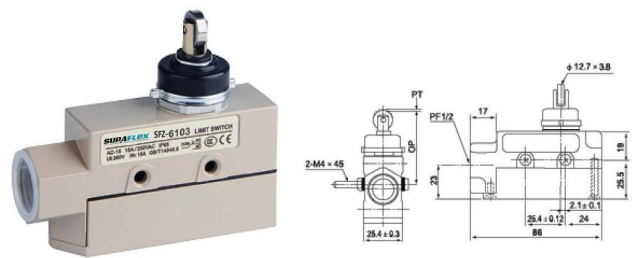
SFZ-6003



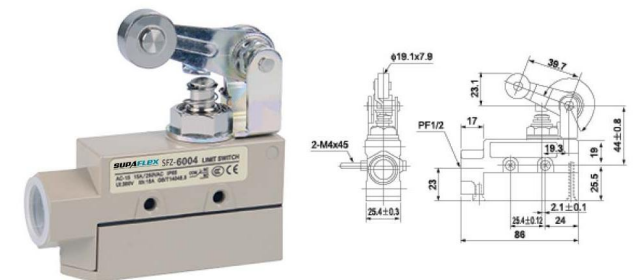
SFZ-6102



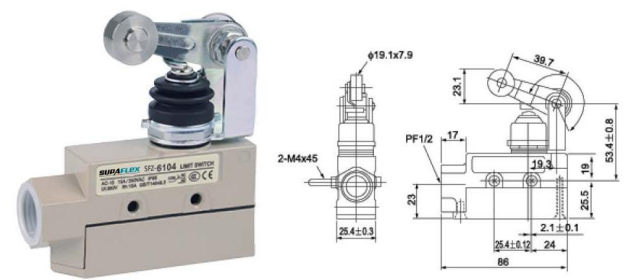
SFZ-6103



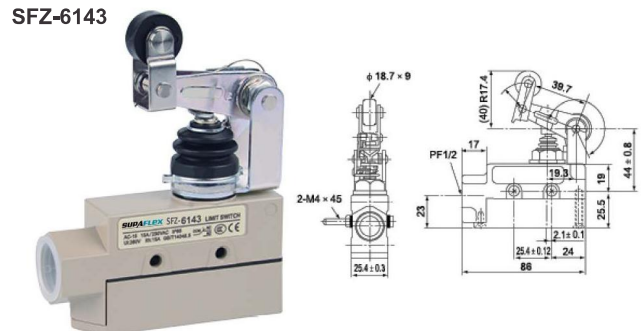
SFZ-6004



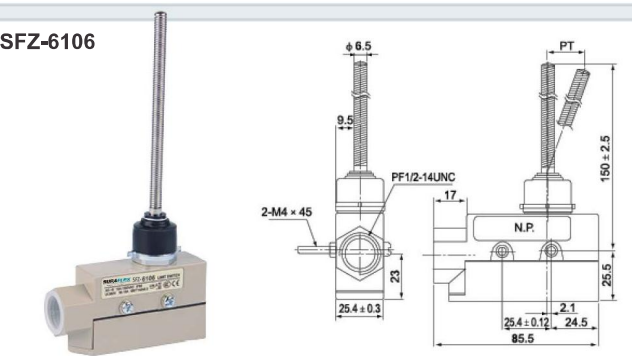
SFZ-6104



SFZ-6143

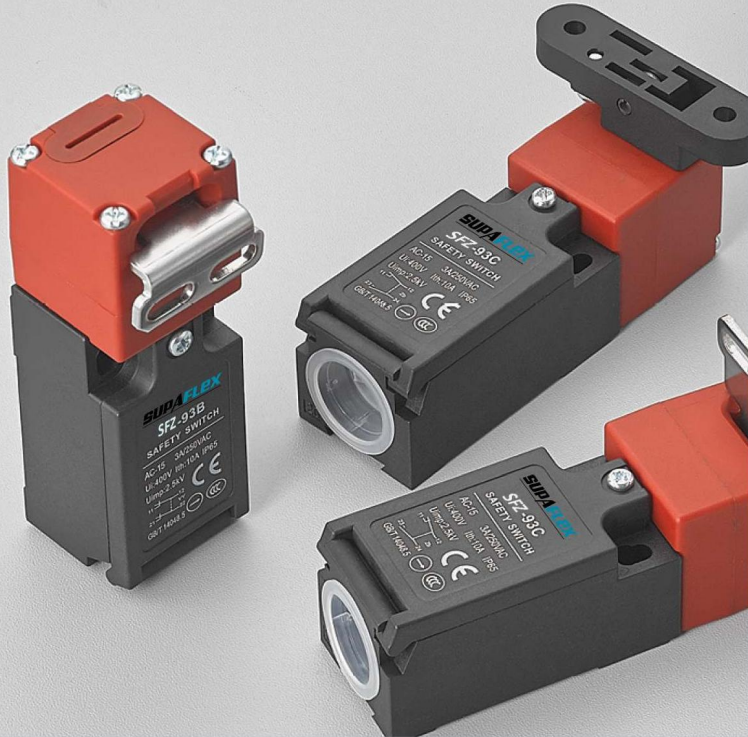


SFZ-6106

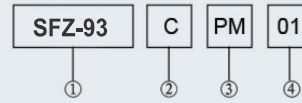




# SFZ-93 Vertical Interlock Safety Limit Switch



## Model Number Structure



Designation	Model NO.	Description
Type	SFZ-93	Safety switch
Type of contact blocks fitted	B	2B(2NC)
	C	1A1B(1NC/1NO)
Conduit/connector size	PG	PG 13.5XP1.5
	PM	M20X1.5
Actuating keys	None	None
	01	Horizontal
	02	90° Vertical
	03	Adjustable

NOTE: The default size of conduit connector is M20x1.5.

## Ratings

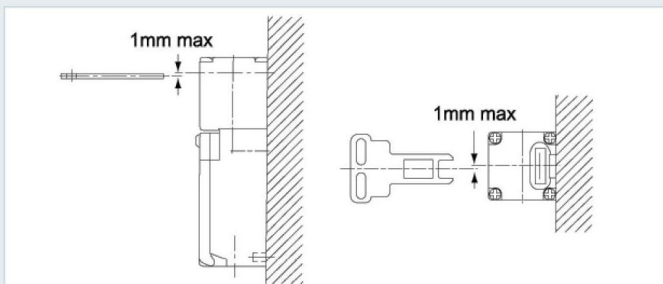
Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	10	3	1.5	10	5	2.5		
250 VAC	10	2	1	10	3	1.5		
400 VAC	10	1.5	0.8	3	1.5	0.8		
8 VDC	10	6	3	10	6	6		
14 VDC	10	6	3	10	6	6		
30 VDC	6	4	3	6	4	4		
125 VDC	0.8	0.2	0.2	0.8	0.2	0.2		
250 VDC	0.4	0.1	0.1	0.4	0.1	0.1		

## Specifications

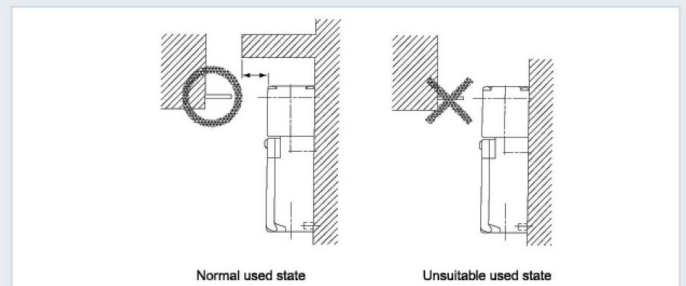
Rating	3A 240VAC (A300)
Operating speed	0.1m~0.5m/s
Operating frequency	30 operations/min
Contact resistance	25mΩ max. (initial).
Insulation resistance	100mΩ min. (at 500VDC)
Rated insulation voltage(UI)	400V
Dielectric strength	AC2500V/Umip 4KV
Vibration	10 to 55Hz, 1.5mm double amplitude
Shock	Mechanical: Approx. 1000m/s <sup>2</sup> (Approx. 100G'S) Electrical: Approx. 300m/s <sup>2</sup> (Approx. 30G'S)
Ambient temperature	Using: -20~+70°C (With no icing)
Ambient Humidity	< 95% RH
Electrical life	150,000 operations/min.
Protection level	IP65 (IEC Standard)

## Cautions

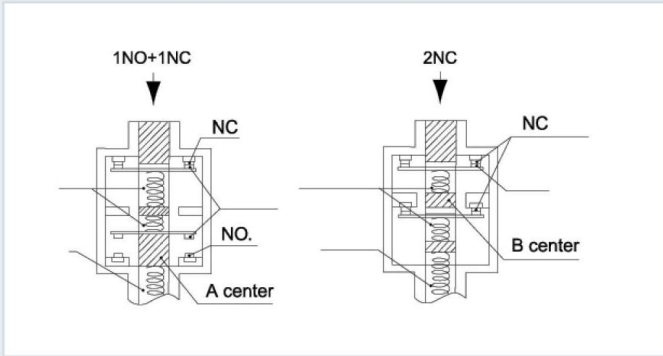
To prevent the wear and the space should be within 1mm between the key and middle of the insert hole.



When in use, there should put a plate on the top to prevent the key overinsert. To prevent nonmovement, the space between the plate and the switch should be under 3 mm.



## Forced Disconnecting Mechanism



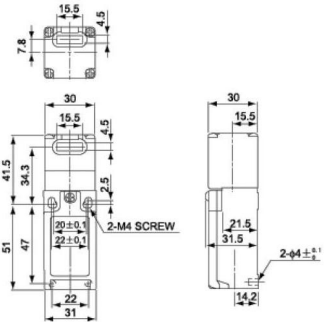
When the contact block get fire, press on the middle of the key structure, the NC strict leaving structure can push the contact block a way cut off the movement.

## Operating Characteristics

Key plug in force	14.7N(1,500gf)
key pull out force	29.42N(3,000gf)
Pretravel	6 ± 3mm
Total travel	(28mm)
Force required to have positive	58.84N(6,000gf)
Positive opening travel	10mm

## Appearance and Dimension

### SFZ-93CPM



### SFZ-93CPM01



### SFZ-93CPM02

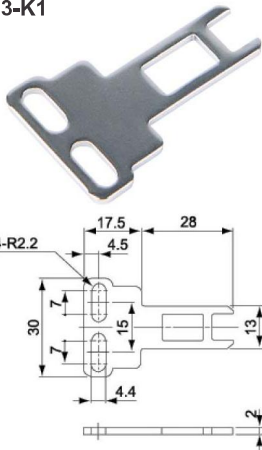


### SFZ-93CPM03

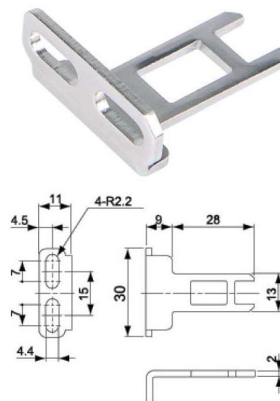


## Key Dimension

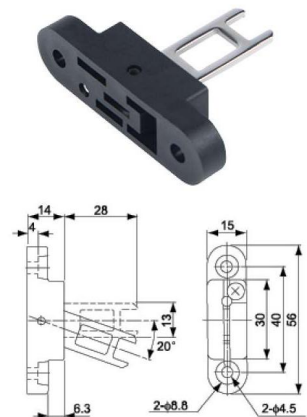
### SFZ-93-K1



### SFZ-93-K2



### SFZ-93-K3



# SFZ-3 Vertical Limit Switch



## Features

- High mechanical strength, mainly consists of aluminum cast
- Water proof, oil proof and dust proof construction
- Various actuators for different applications

## Contact Form



## Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	5 (0.1)		1.5	0.7	3		2.5	1.3
250 VAC	3		1	0.5	2		1.5	0.8
8 VDC	5 (0.1)		2		5	4	3	
14 VDC	5 (0.1)		2		4	4	3	
30 VDC	4 (0.1)		2		3	3	3	
125 VDC	0.4		0.05		0.4	0.4	0.05	
250 VDC	0.2		0.03		0.2	0.2	0.03	

Note: Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

## Specifications

Rating	5A 125V,3A 250VAC
Operating speed	1mm~1m/s 0.1mm~0.5m/s( Plunger type)
Operating frequency	Electrical:30 operations/min.
Contact resistance	25mΩ max.(initial)
Insulation resistance	100mΩ min.(at 500VDC)
Dielectric strength	1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
Vibration Frequency	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
	10 to 55HZ,1.5mm double amplitude
Shock	Mechanical:Approx.1000m/s <sup>2</sup> (Approx.100G'S)
	Electrical:Approx.500m/s <sup>2</sup> (Approx.50G'S)
Ambient temperature	Using: -20~+70°C (With no icing)
Humidity	< 95% RH
Electrical life	200,000 operations/min.
Weight	Approx.360g(cable length 3m) Approx.540g(cable length 5m)
	Protection level

## 动作特性 Operating Characteristics

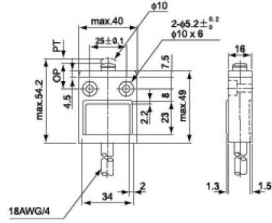
Model	SFZ-3	SFZ-3101	SFZ-3102	SFZ-3103	SFZ-3104 (3107/3108)	SFZ-3110	SFZ-3111	SFZ-3112	SFZ-3113	SFZ-3169 (3166/3167/3168)
Operating Force	OF (Max.)	11.77N	11.77N	11.77N	5.69N	11.77N	17.65N	17.65N	17.65N	1.47N
Release Force	RF (Min.)	4.41N	4.41N	4.41N	1.47N	4.41N	4.41N	4.41N	4.41N	-
Pre-Travel	PT (Max.)	1.8mm	1.8mm	1.8mm	25	1.8mm	1.8mm	1.8mm	1.8mm	15°
Over Travel	OT (Min.)	3mm	3mm	3mm	40	3mm	3mm	3mm	3mm	-
Movement Differential	MD (Max.)	0.2mm	0.2mm	0.2mm	3	0.2mm	0.2mm	0.2mm	0.2mm	-
Operating Position	OP(mm.)	15.7 ± 1mm	28.5 ± 1mm	28.5 ± 1mm	-	28.5 ± 1mm	24.9 ± 1mm	34.3 ± 1mm	34.3 ± 1mm	-

# SFZ-3 Vertical Limit Switch

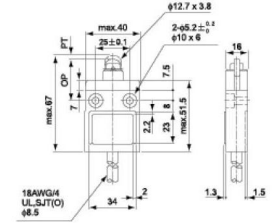


## Appearance and Dimension

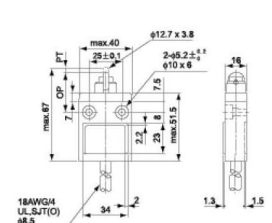
SFZ-3101



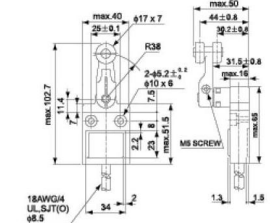
SFZ-3102



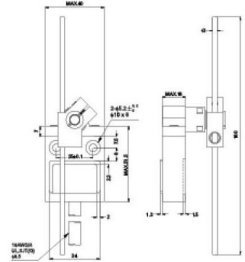
SFZ-3103



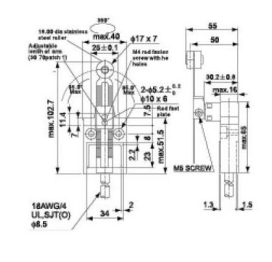
SFZ-3104



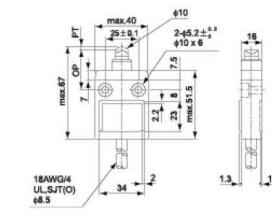
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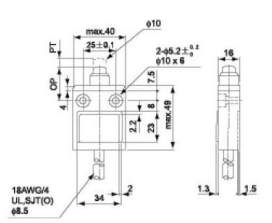
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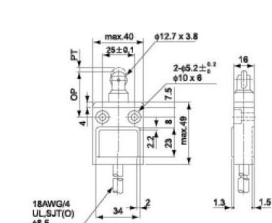
SFZ-3110



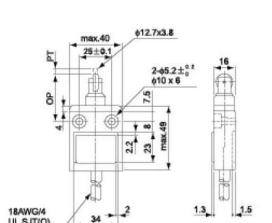
SFZ-3111



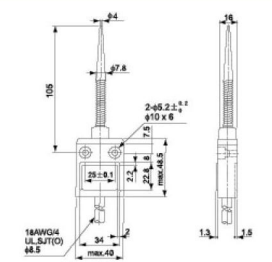
SFZ-3112



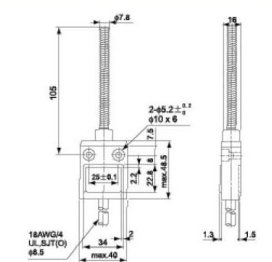
SFZ-3113

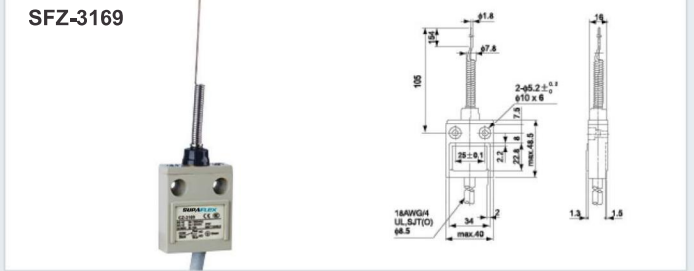
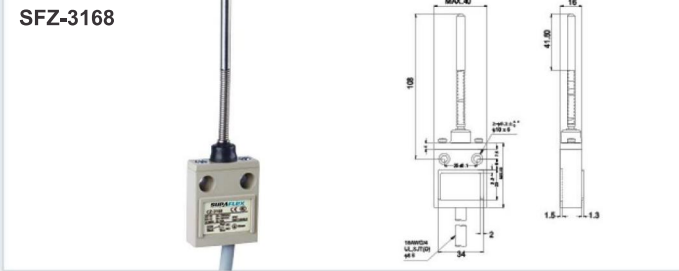


SFZ-3166



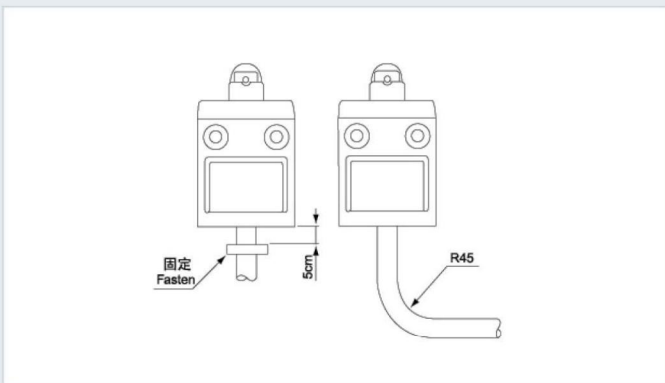
SFZ-3167





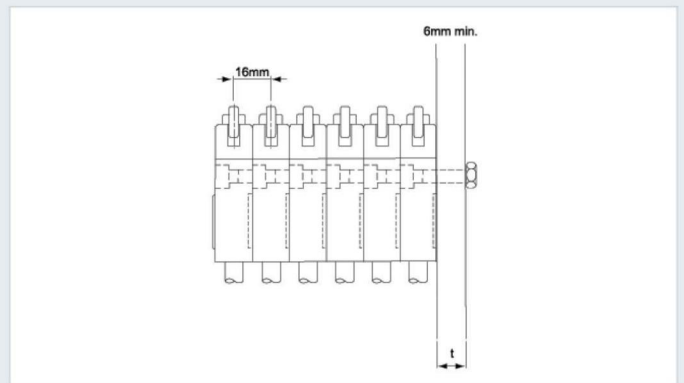
### Cabling Attention

The switch bodies are filled with resin for sealing purposes. To avoid stressing the cable and switch body, fasten the switch at 5 cm or farther away from the switch body, should the wire be bent, the bending radius shall be at least 45mm.



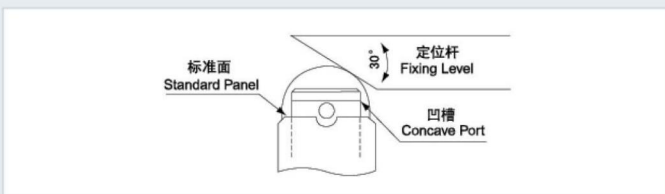
### Quantity Mounted Using Attention

A maximum of six switches may be mounted together as a switch bank. During the installation, the convex part of the switch back. The mounting panel shall be 6mm or thicker.

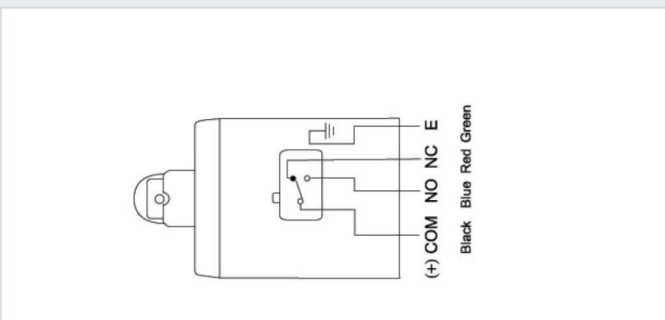


### Installation Attention

The service life and accuracy of switches will be effected by the shape of actuator operation frequency & over travel. So the angular of the fixing level should be about  $30^\circ$ , the surface finish of the fixing level should be over, the hardness is from HV400~500. When installing, the position of the concave part should be above the standard panel



### Contact Form

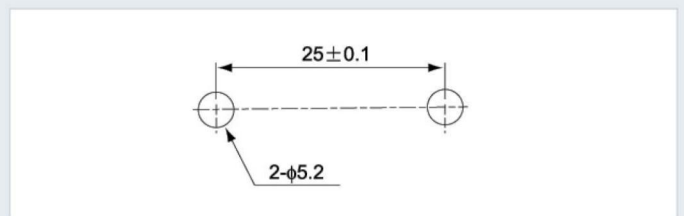


Recommended tightening torque according to the following form.

Model	Screw type	Torque
1	M5 fastening screws	43.4~52lb.in (50~60kgf.cm)
2	M3.5 installing screws	6.9~7.9lb.in (8~9kgf.cm)

### Mounting Holes

Mount the switch body to a rigid mounting panel using two M5 screws.





## Features

- Double circuit type of limit switch
- Economic plastic type of limit switch
- Small size, water-proof and oil-proof construction
- Built-in contact box has double-spring and long mechanical life
- Smooth operation with larger over travel distance
- Various actuators for different applications

## Contact Form



## Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
Inrush Current	N.C: below 24A, N.O: below 12A							

- NOTES: 1. Inductive load has a power factor of 0.4 min.(AC) and a time constant of 7 msec. max.(DC).  
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.  
 3. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

## Operating Characteristics

Model	SFLS	101 301	102/103 302/303	111 311	121/121M 321/321M	127 327	131/131M 331/331M	161 361	171 371	181 381	191 391
Operating force	OF (Max.)	700g	700g	700g	500g	700g	500g	100g	100g	100g	500g
Release force	RF (Min.)	200g	200g	200g	100g	200g	100g	40g	40g	40g	100g
Pre-travel	PT (Max.)	1.8mm	1.8mm	1.8mm	20°	1.8mm	20°	30mm	30mm	30mm	20°
Tripping position	TP ± 10%	2.0mm	2.0mm	2.0mm	22.5°	2.0mm	22.5°	22.5°	22.5°	22.5°	22.5°
Movement differential	MD (Max.)	1.2mm	1.2mm	1.2mm	10°	1.2mm	10°	14°	14°	14°	10°
Over travel	OT (Min.)	4.0mm	4.0mm	4.0mm	75°	4.0mm	75°	20mm	20mm	20mm	75°
Total travel	TT (Min.)	5.8mm	5.8mm	5.8mm	95°	5.8mm	95°	50mm	50mm	50mm	95°
Rotary indexing					22.5°		22.5°				22.5°

## Specifications

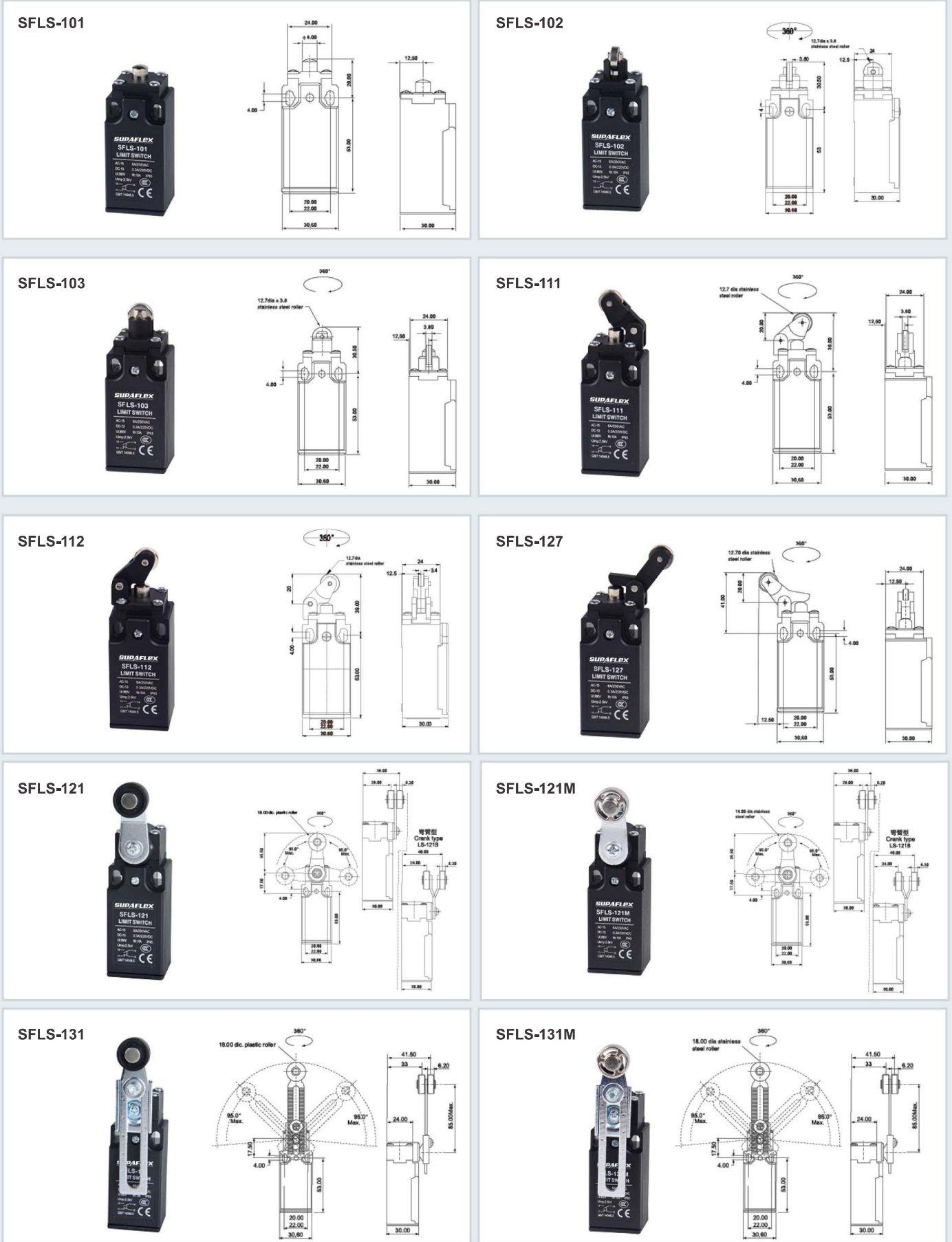
Operation speed	5mm-0.5m/s
Operating frequency	Electrical: 30 operations/min
Contact resistance	25mΩ max. (initial value)
Insulation resistance	100mΩ min. (below 500VDC)
Dielectric strength	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
Vibration	10-55Hz, 1.5mm double amplitude
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S)
	Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+70°C (With no icing)
Humidity	<95% RH
Electrical life	500,000 operations above
Protection level	IP66

NOTES: The default size of conduit connector is M20x1.5, outfitting cable connector. Conduit connector size is PG13.5, with product model number plus (-P), example: SFLS-103-P

# SFLS-1 Vertical Limit Switch

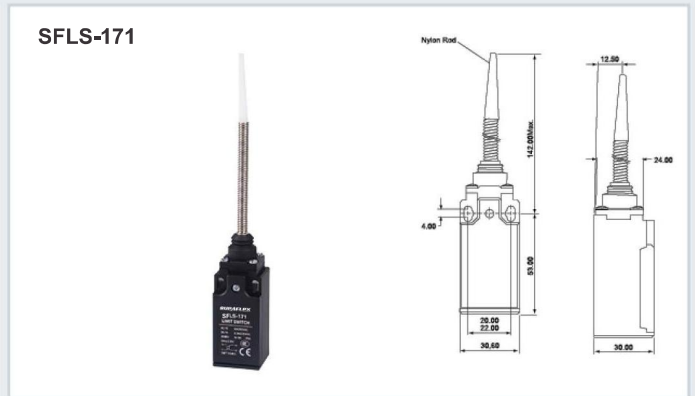


## Appearance and Dimension



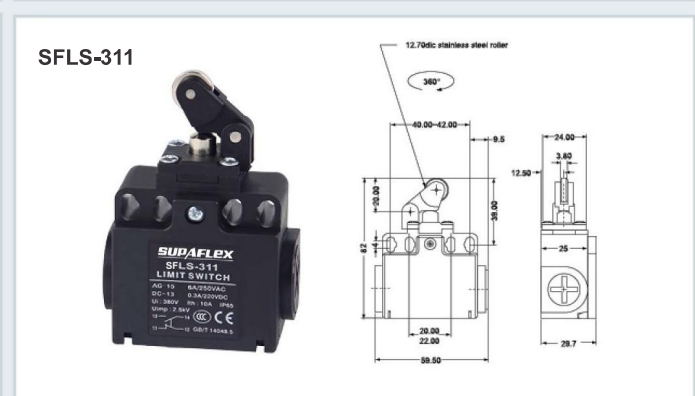
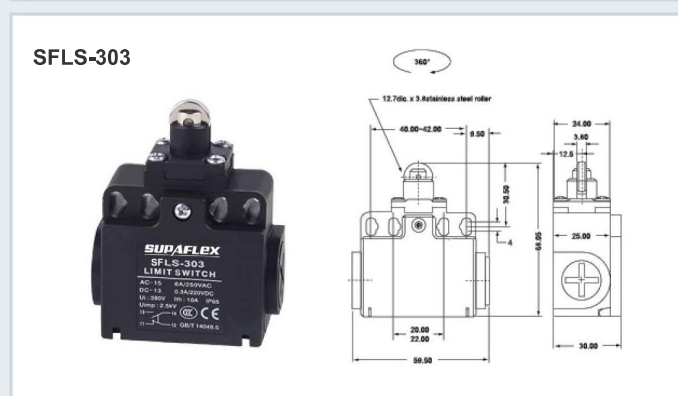
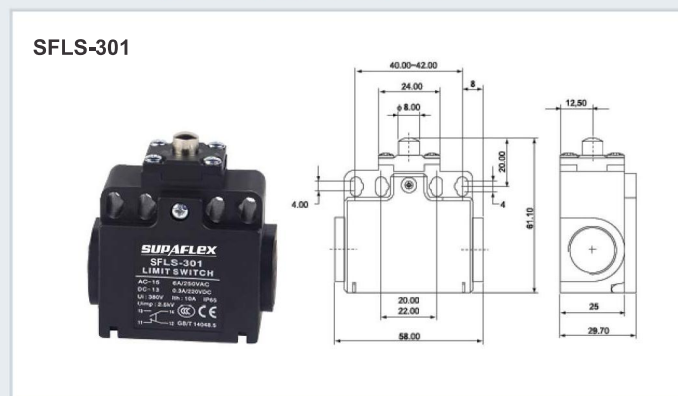
# SFLS-1 Vertical Limit Switch

## Appearance and Dimension



# SFLS-3 Vertical Limit Switch

## Appearance and Dimension

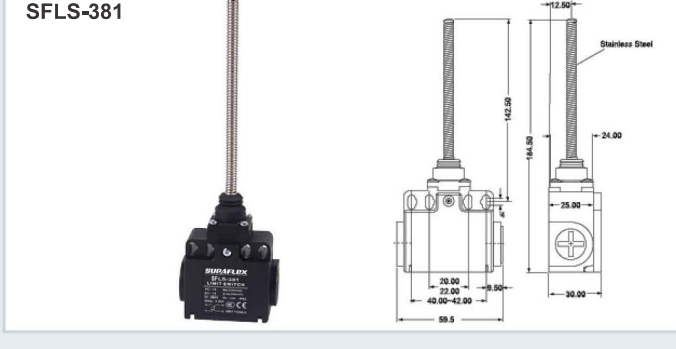
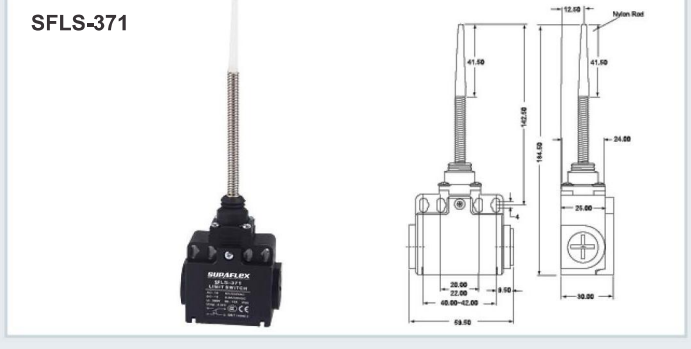
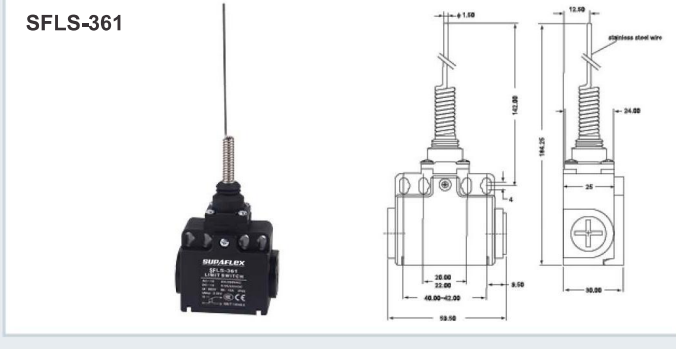
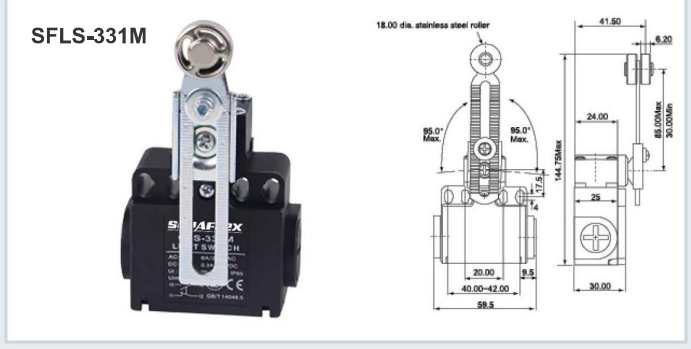
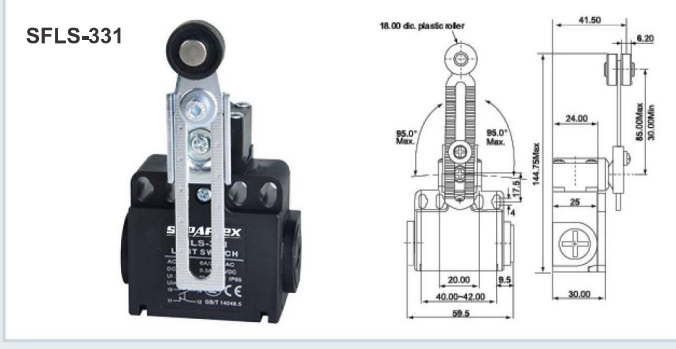
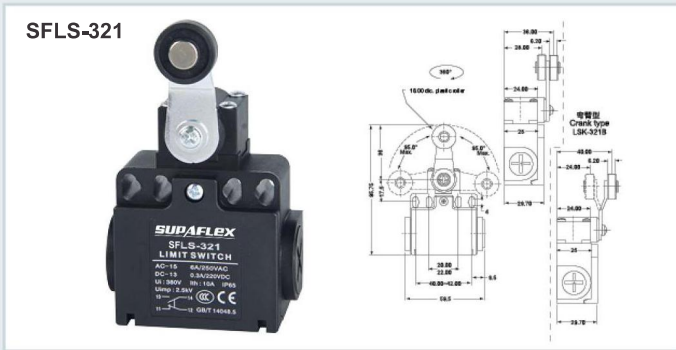
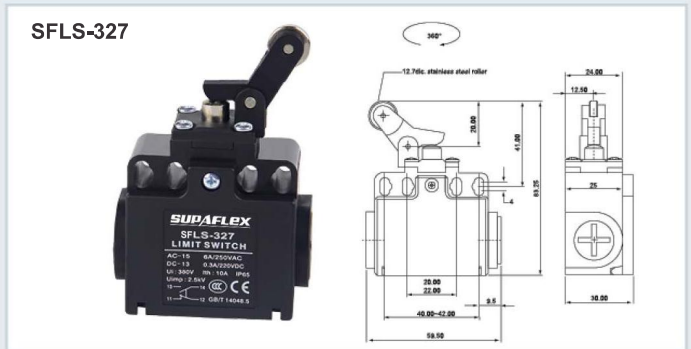
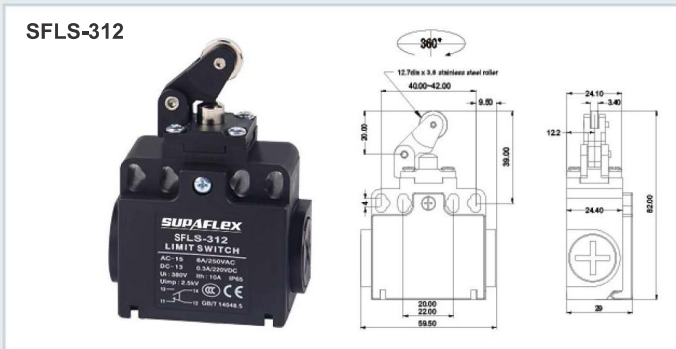




# SFLS-3 Vertical Limit Switch



## Appearance and Dimension



# SF4N Vertical Safety Limit Switch



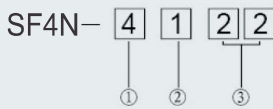
## Features

- Forced open action device (NC contacts only), to disconnect the contact when the contact has fusing and other failures
- Strengthened top seal structure improves the sealing performance
- Built-in contact holder has fast-action type: 1NC/1NO; Slow-action: 1NC/1NO and 2NC

## Specifications

Protection level		IP66
Life	Electrical	More than 500,000 times (AC250V 3A, resistive load)
		More than 300,000 times (AC250V 10A, resistive load)
Operating speed		1mm-0.5m/s (SF4N-4120)
Operating frequency		Electrical: 30 operations/min
Contact resistance		25 mΩ or less
Minimum working load		1mA resistive load below DC5V (N standard reference value)
Rated insulation voltage (Ui)		300V
Electric shock protection grade		Class II (double insulated)
Pollution degree (Using conditions)		Pollution degree 3 (EN60947-5-1)
Withstand voltage (EN60947-5-1)		Between homopolar terminals: 2.5kV
		Between heteropolar terminals: 2.5kV
		Between terminals and uncharged metal parts: 6kV
Insulation resistance		Above 100MΩ
Contact gap		Minimum 2 × 0.5mm quick-action type, Minimum 2 × 2mm slow-action type
Vibration	Malfunction	10 - 55Hz 0.75mm single amplitude
Impact	Duration	1,000m/s <sup>2</sup>
	Malfunction	300m/s <sup>2</sup>
Ambient temperature		Using: -20~+70°C (With no icing)
Ambient humidity		Less than 95% RH
Weight		82g(SF4N-1120) 99g (SF4N-5120)

## Model Number Structure



Item	Code	Description
① Conduit / connector size	1	Pg13.5 (1 conduit type)
	4	M20 (1 conduit type)
	5	Pg13.5 (2 conduits type)
	8	M20 (2 conduits type)
② Built-in switch	1	1NC/1NO (quick-action type)
	2	2NC (quick-action type)
	A	1NC/1NO (slow-action type)
	B	2NC (slow-action type)
③ Head and driving rod	20	Roller lever (resin lever, resin ball)
	22	Roller lever (metal lever, resin ball)
	25	Roller lever (metal lever, metal resin ball)
	2G	Adjustable roller lever, Form Lock (metal lever, resin ball)
	2H	Adjustable roller lever, Form Lock (metal lever, rubber ball)
	2M	Adjustable roller lever, Form Lock (metal lever, metal resin ball)
	31	Top plunger type
	32	Top plunger ball type
	62	Unilateral cantilever ball type (horizontal)
	72	Unilateral cantilever ball type (vertical)
	80	Whisker type
	87	Plastic stick type

NOTE: The default size of conduit connector is M20x1.5.

Note 1. The above values are initial values.

Note 2. Once the contact is connected to a standard load, it can not be used to connect a smaller load. If so, the contact may result in rough surface, thus losing contact reliability.

\*1. The protection level is gotten based on test method of (EN60947-5-1). Please make sure its sealing under actual environmental conditions before use. The switch box has dust and oil resistance structure, but it should be used in places without dust, oil and chemicals. Otherwise it may lead to premature wear, damage or malfunction.

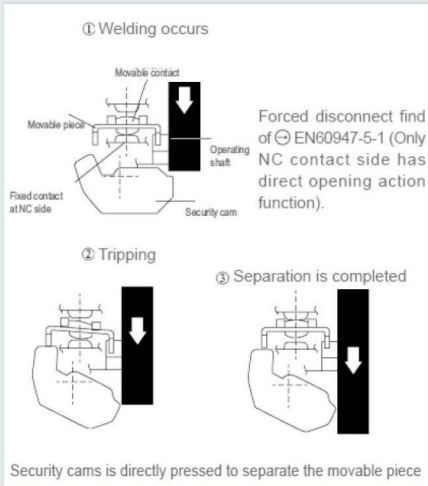
\*2. The durability is for ambient temperature of 5°C ~ 35°C and humidity of 40% to 70% RH. For additional details, please contact us.

\*3. When the ambient temperature is above 35°C, more than 2 circuits 3A 250VAC loads are prohibited.

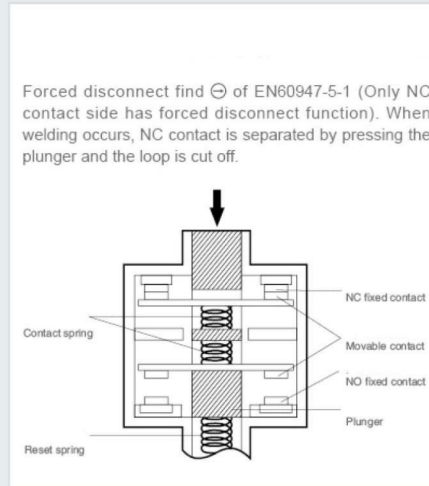
\*4. The values will vary with different switching frequency, environmental conditions, reliability level and other factors. Please confirm on the actual load in advance.

## Forced Disconnecting Mechanism

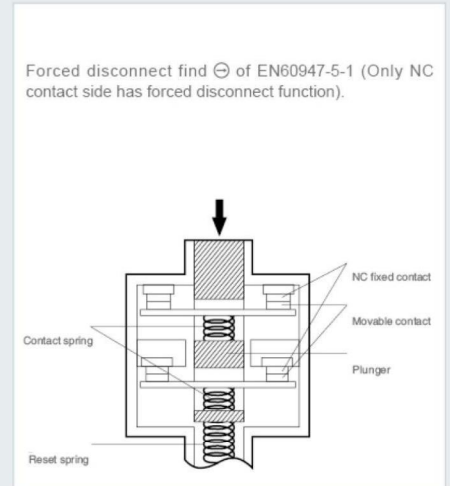
### 1NC and 1NO contacts (quick-action type)



### 1NC and 1NO contacts (slow-action type)



### 2NC contacts (slow-action type)



## Contact Form

Model	Contact	Contact form	Operation mode	Explanation
SF4N-□1□	1NC/1NO (Quick-action type)			Only NC contact (31-32) has forced disconnect function (⊖) Contacts (13-14) and (31-32) can be used as heteropoles.
SF4N-□2□	2NC (Quick-action type)			Only NC contact (31-32) has forced disconnect function (⊖) Contacts (11-12) and (31-32) can be used as heteropoles.
SF4N-□A□	1NC/1NO (Slow-action type)			Only NC contact (11-12) has forced disconnect function (⊖) Contacts (11-12) and (33-34) can be used as heteropoles.
SF4N-□B□	2NC (Slow-action type)			Only NC contact (31-32) has forced disconnect function (⊖) Contacts (11-12) and (31-32) can be used as heteropoles.

## Operating Characteristics

### Quick-action type (1NC/1NO)(2NC), slow-action type (2NC)

Action characteristics	Model	SF4N-□120	SF4N-□122	SF4N-□125	SF4N-□226	SF4N-□131	SF4N-□131	SF4N-□162	SF4N-□172	SF4N-□12H	SF4N-□12G	SF4N-□80	SF4N-□87
		SF4N-□220	SF4N-□222	SF4N-□225	SF4N-□B26	SF4N-□231	SF4N-□231	SF4N-□262	SF4N-□272	SF4N-□22H	SF4N-□12M		
Action force	OF	Max.			5.0N	6.5N	6.5N	5.0N	5.0N	4.5N	1.5N	1.5N	
Restore force	RF	Min.			0.5N	1.5N	1.5N	0.8N	0.8N	0.4N			
Pretravel	PT				18~27°	2mm	2mm	4mm	4mm	18 ~ 27°	15°	15°	
Overtravel	OT	Min.			40°	4mm	4mm	5mm	5mm	40°			
Poor response travel	MD	Max.*1			14°	1mm	1mm	1.5mm	1.5mm	14°			
Action position	OP					18.2 ± 0.5mm	28.6 ± 0.8mm	37 ± 0.8mm	27 ± 0.8mm				
Total travel	TT	*2			(80° )	(6mm)	(6mm)	(9mm)	(9mm)	(80° )			
Forced disconnected pretravel	DOT	Min.*3			50°	3.2mm	3.2mm	5.8mm	4.8mm	50°			
Forced disconnected force	DOF	Min.*3			20N	20N	20N	20N	20N	20N			

Note: The simultaneity of ON / OFF operation of 2NC contacts have difference, please make sure before using it.

\*1. Only for quick-action type.

\*2. Reference values.

\*3. Only for slow-action type. For safe use, please make sure that all values are within the range of maximum or minimum.

\*4. The property value when length of lever is 32mm.

## Operating Characteristics

(1NC/1NO)

Slow-action type (1NC/1NO)

Action characteristics		Model		SF4N-□A20	SF4N-□A22	SF4N-□A25	SF4N-□A26	SF4N-□A31	SF4N-□A32	SF4N-□A62	SF4N-□A72	SF4N-□A2H	SF4N-□A2G*8
Action force	OF	Max.		5.0N				6.5N	6.5N	5.0N	5.0N		4.5N
Restore force	RF	Min.		0.5N				1.5N	1.5N	0.8N	0.8N		0.4N
Pretravel	PT	*1		18 ~ 27°				2mm	2mm	4mm	4mm		18 ~ 27°
	PT	(2nd)*2		(44° )				(2.9mm)	(2.9mm)	(5.2mm)	(4.3mm)		(44° )
	PT	*3		27.5 ~ 36.5°				2.8mm	2.8mm	4mm	4mm		27.5 ~ 36.5°
	PT	(2nd)*4		(18° )				(1mm)	(1mm)	(1.5mm)	(1.5mm)		(18° )
Overtravel	OT	Min.		40°				4mm	4mm	5mm	5mm		40°
Action position	OP			—				18.2 ± 0.5mm	28.6 ± 0.8mm	37 ± 0.8mm	27 ± 0.8mm		—
	OP	*5		—				17.4 ± 0.5mm	28 ± 0.8mm	36 ± 0.8mm	26.1 ± 0.8mm		—
Total travel	TT	*6		(80° )				(6mm)	(6mm)	(9mm)	(9mm)		(80° )
Forced disconnected pretravel	DOT	最小 Min.*7		50°				3.2mm	3.2mm	5.8mm	4.8mm		50°
Forced disconnected force	DOF	最小 Min.*7		20N				20N	20N	20N	20N		20N

\*1. NC contact is open.

\*2. NO contact is closed.

\*3. Only for MBB type.

\*4. It is the reference value of MBB type.

\*5. Only for MBB type.

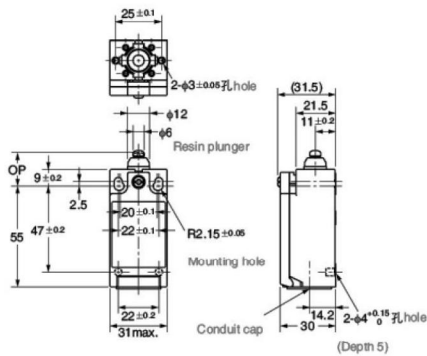
\*6. Reference values

\*7. For safe use, please make sure that all values are within the range of maximum or minimum.

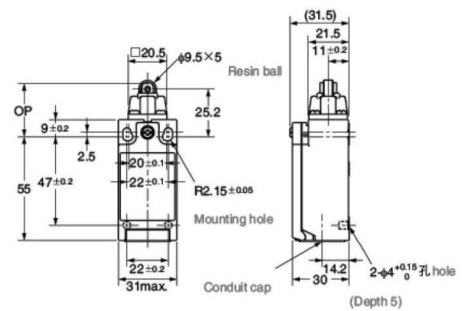
\*8. The property value when length of lever is 32mm.

## Appearance and Dimension

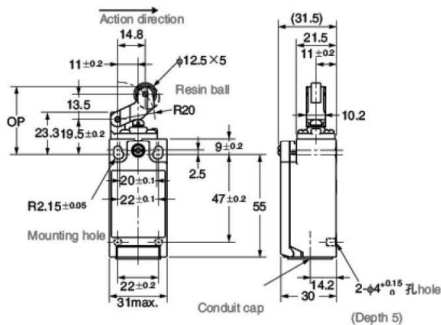
SF4N-4131



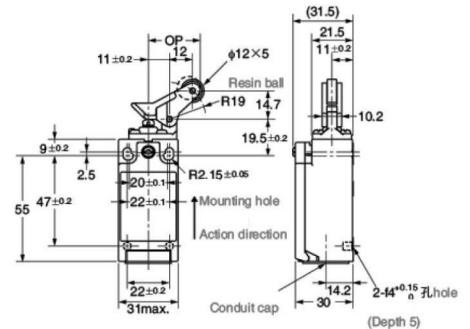
SF4N-4132



SF4N-4162



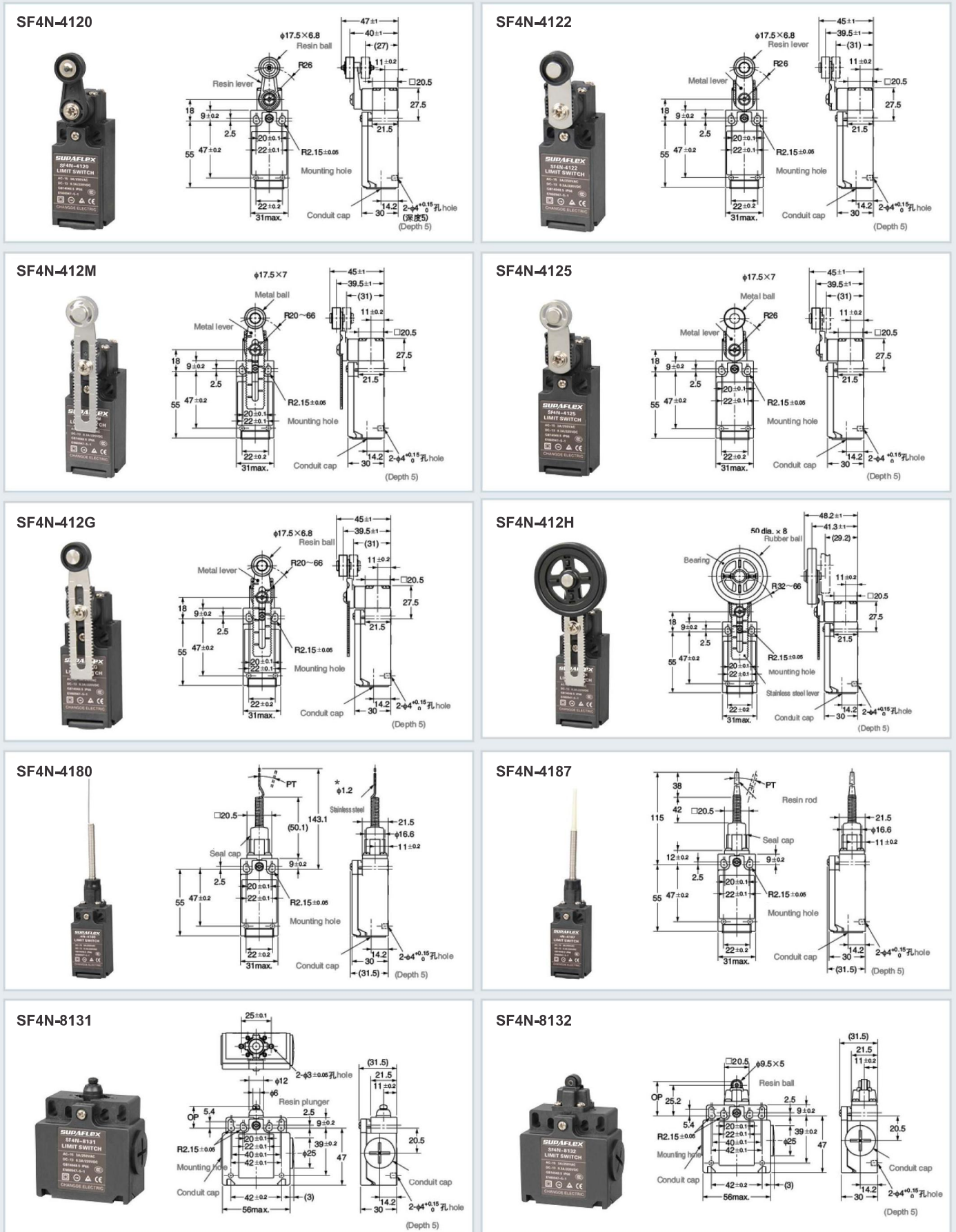
SF4N-4172



# SF4N Vertical Safety Limit Switch



## Appearance and Dimension



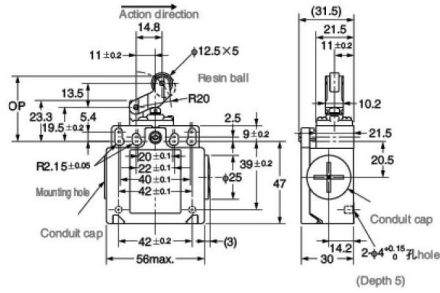
\* Application of stainless steel washers and plastic stick are within 35mm from the front end, the entire action is within 70mm.

# SF4N Vertical Safety Limit Switch

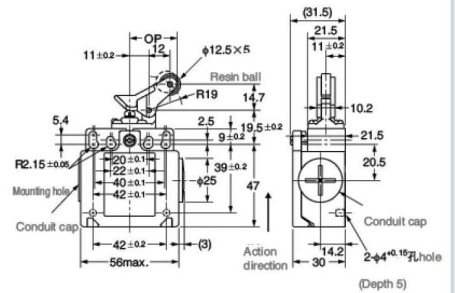


## Appearance and Dimension

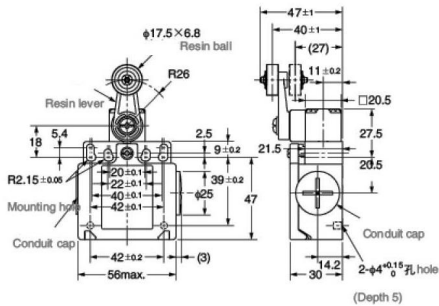
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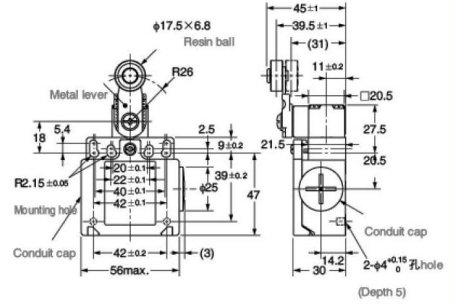
SF4N-8172



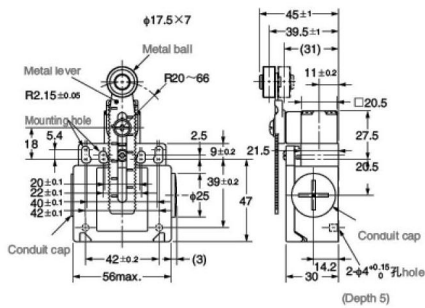
SF4N-8120



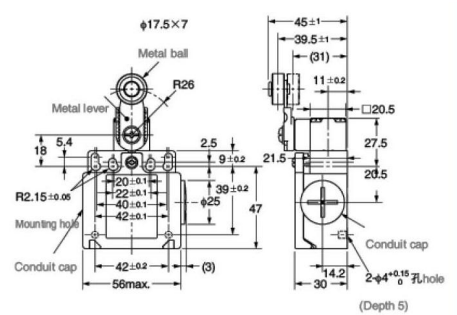
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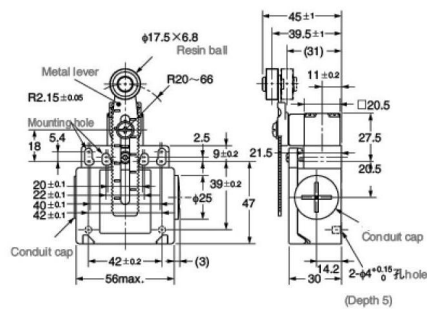
SF4N-812M



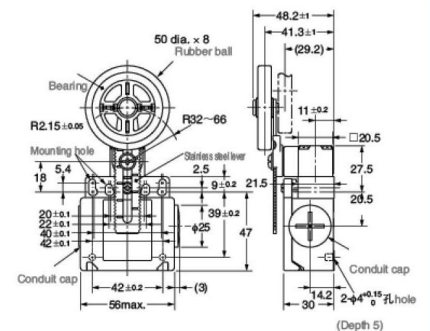
SF4N-8125



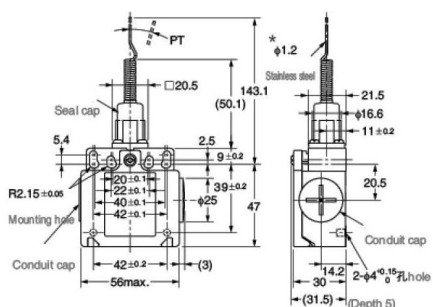
SF4N-812G



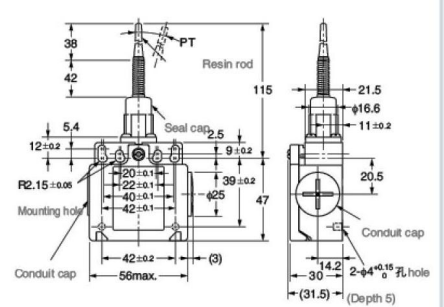
SF4N-812H



SF4N-8180



SF4N-8187



\* Use of application of stainless steel washers and plastic stick are within 35mm from the front end, the entire action is within 70mm



## Features

- Forced open action device(NC contacts only), to disconnect the contact when the contact has fusing and other failures
- Strengthened top seal structure improves the sealing performance
- Built-in contact holder has slow-action: 1NC /1NO and 2NC

## Specifications

Protection level	IP66	
Life	Electrical	More than 500,000 times (AC250V 3A, resistive load)
		More than 300,000 times (AC250V 10A, resistive load)
Operating speed	1mm-0.5m/s(SF4N-4A20R )	
Operating frequency	Max. 30 times/min	
Contact resistance	25 mΩ or less	
Minimum working load	1mA resistive load below DC5V (N standard reference value)	
Rated insulation voltage (Ui)	300V	
Electric shock protection grade	Class II (double insulated)	
Pollution degree (Using conditions)	Pollution degree 3 (EN60947-5-1)	
Withstand voltage (EN60947-5-1)	Between homopolar terminals: 2.5kV	
	Between heteropolar terminals: 2.5kV	
	Between terminals and uncharged metal parts: 6kV	
Insulation resistance	Above 100MΩ	
Contact gap	Minimum 2 × 0.5mm quick-action type,	
	Minimum 2 × 2mm slow-action type	
Vibration	误动作 Malfunction	10 ~ 55Hz 0.75mm single amplitude
Impact	耐久 Duration	1,000m/s <sup>2</sup>
	误动作 Malfunction	300m/s <sup>2</sup>
Ambient temperature	Using: -20~+70℃ (With no icing)	
Ambient humidity	Less than 95% RH	
Weight	92g	

## Model Number Structure

SF4N - 4 A 3 1 R

①      ②      ③

Item	Code	Description
① Conduit / connector size	1	Pg13.5 (1 conduit type)
	4	M20 (1 conduit type)
	5	Pg13.5 (2 conduits type)
	8	M20 (2 conduits type)
② Built-in switch	A	1NC/1NO (slow-action type)
	B	2NC (slow-action type)
③ Head and driving rod	20	Roller lever (resin lever, resin ball)
	22	Roller lever (metal lever, resin ball)
	25	Roller lever (metal lever, metal resin ball)
	2G	Adjustable roller lever, Form Lock (metal lever, resin ball)
	2H	Adjustable roller lever, Form Lock (metal lever, rubber ball)
	2M	Adjustable roller lever, Form Lock (metal lever, metal resin ball)
	31	Top plunger type
	32	Top plunger ball type
	62	Unilateral cantilever ball type (horizontal)
	72	Unilateral cantilever ball type (vertical)

NOTE: The default size of conduit connector is M20x1.5.

Note 1. The above values are initial values.

Note 2. Once the contact is connected to a standard load, it can not be used to connect a smaller load. If so, the contact may result in rough surface, thus losing contact reliability.

\*1. The protection level is gotten based on test method of (EN60947-5-1). Please make sure its sealing under actual environmental conditions before use. The switch box has dust and oil resistance structure, but it should be used in places without dust, oil and chemicals. Otherwise it may lead to premature wear, damage or malfunction.

\*2. The durability is for ambient temperature of 5℃ ~ 35℃ and humidity of 40% to 70% RH. For additional details, please contact us.

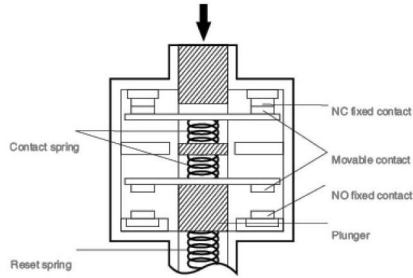
\*3. When the ambient temperature is above 35℃, more than 2 circuits 3A 250VAC loads are prohibited.

\*4. The values will vary with different switching frequency, environmental conditions, reliability level and other factors. Please confirm on the actual load in advance.

## Forced Disconnecting Mechanism

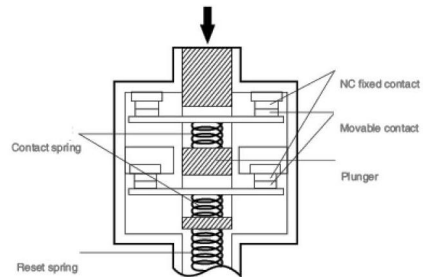
### ■ 1NC and 1NO contacts (slow-action type)

Only NC contact has forced disconnect structure.  
When melting occurs, the contact can be isolated by pressing the plunger to cut off the loop. (In accordance with EN60947-5-1 force disconnect operation).



### ■ 2NC contacts (slow-action type)

When melting occurs, the contact can be isolated by pressing the plunger to cut off the loop. (In accordance with EN60947-5-1 force disconnect operation).



## Contact Form

Model	Contact	Contact form	Operation mode	Explanation
SF4N-□A□R	1NC/1NO (Slow-action type)			Only NC contact (11-12) has forced disconnect function (⊖) Contacts (11-12) and (33-34) can be used as heteropoles.
SF4N-□B□R	2NC (Slow-action type)			Only NC contact (31-32) has forced disconnect function (⊖) Contacts (11-12) and (31-32) can be used as heteropoles.

## 动作特性 Operating Characteristics


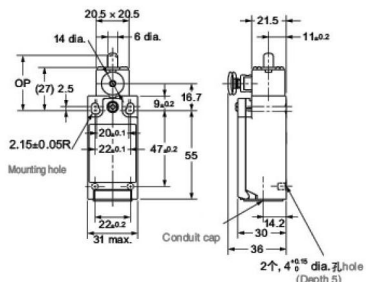

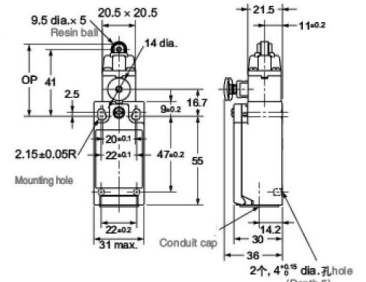

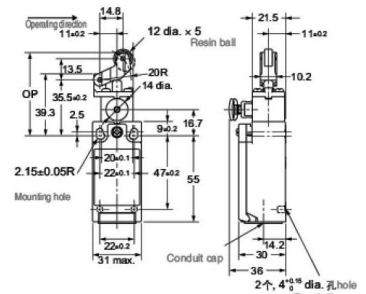

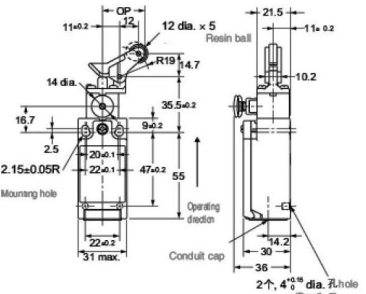

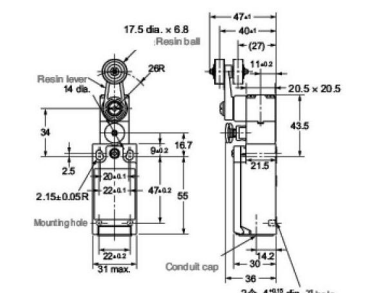

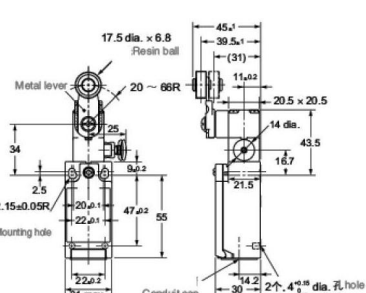

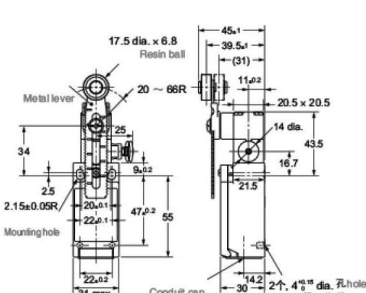

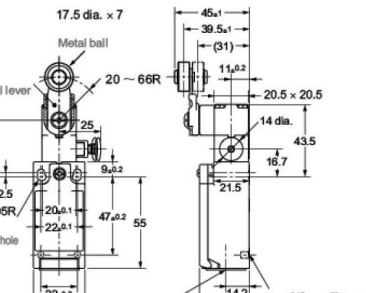

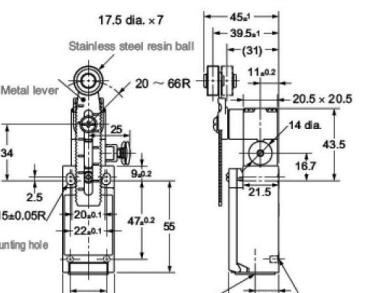

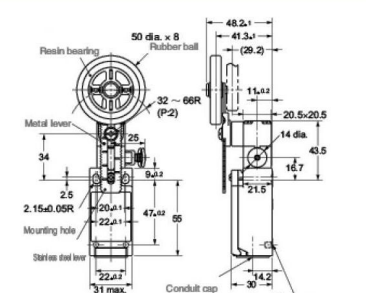
型号 Model		SF4N-□□20R	SF4N-□□22R	SF4N-□□2GR*2	SF4N-□□2HR	SF4N-□□31R	SF4N-□□32R	SF4N-□□62R	SF4N-□□72R
LF	Max.	6.45N	6.45N	5.6N	5.4N	10.8N	10.8N	7.5	7.9N
LT	Max.	55°	55°	55°	55°	4.5mm	4.5mm	7mm	7mm
PT1	*3	18~27°	18~27°	18~27°	18~27°	2mm	2mm	4mm	4mm
PT2	*4	(44°)	(44°)	(44°)	(44°)	(2.9mm)	(2.9mm)	(5.2mm)	(4.3mm)
OP		--	--	--	--	34 ± 0.5mm	44.4 ± 0.8mm	53 ± 0.8mm	27 ± 0.8mm
TT	*5	80°	80°	80°	80°	(6mm)	(6mm)	(9mm)	(9mm)
DOT	Min. *6	50°	50°	50°	50°	3.2mm	3.2mm	5.8mm	5.8mm
DOF	Min.* 6	20N		20N	20N	20N	20N	20N	20N

Note

- \*1. The simultaneity of ON / OFF operation of 2NC contacts have difference, please make sure before using it.
- \*2. The property value when length of lever is 32mm.
- \*3. PT value when NC contact is at open (OFF) state.
- \*4. PT common value when NO contact is at close (ON) state (only for 1NC/1NO types).
- \*5. Reference values.
- \*6. Load and travel values of forced disconnect structure. To ensure safety, be sure to remain within the upper and lower range.



## Appearance and Dimension

<p><b>SF4N-4A31R</b></p>  	<p><b>SF4N-4A32R</b></p>  
<p><b>SF4N-4A62R</b></p>  	<p><b>SF4N-4A72R</b></p>  
<p><b>SF4N-4A20R</b></p>  	<p><b>SF4N-4A22R</b></p>  
<p><b>SF4N-4A2GR</b></p>  	<p><b>SF4N-4A25R</b></p>  
<p><b>SF4N-4A2MR</b></p>  	<p><b>SF4N-4A2HR</b></p>  

# SF4N-□R Vertical Manual Reset Safety Limit Switch



## Appearance and Dimension

<p><b>SF4N-8A31R</b></p>	<p><b>SF4N-8A32R</b></p>
<p><b>SF4N-8A62R</b></p>	<p><b>SF4N-8A72R</b></p>
<p><b>SF4N-8A20R</b></p>	<p><b>SF4N-8A22R</b></p>
<p><b>SF4N-8A2MR</b></p>	<p><b>SF4N-8A25R</b></p>
<p><b>SF4N-8A2GR</b></p>	<p><b>SF4N-8A2HR</b></p>

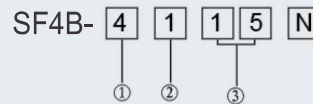
# SF4B-□N Vertical Safety Limit Switch



## Features

- Forced open action device (NC contacts only), to disconnect the contact when the contact has fusing and other failures
- Strengthened top seal structure improves the sealing performance
- Built-in contact holder has fast-action type: 1NC / 1NO; Slow-action: 1NC / 1NO and 2NC

## Model Number Structure



Item	Code	Description
① Conduit / connector size	1	Pg13.5 (1 conduit type)
	4	M20 (1 conduit type)
② Built-in switch	1	1NC/1NO (quick-action type)
	5	1NC/1NO (slow-action type)
	A	2NC (slow-action type)
③ Head and driving rod	11	Roller lever (resin lever, resin ball)
	12	Adjustable roller lever, Form-Lock (metal lever, metal ball)
	15	Roller lever (metal ball)
	16	Adjustable roller lever, Form-Lock (resin ball)
	17	Adjustable stick lever, Form-Lock (long lever)
	18	Adjustable roller lever, Form Lock (metal lever, rubber ball)
	70	Top ball plunger type
	71	Ball plunger type
	72	Ball plunger type
	81	Coil spring type
	87	Plastic stick type
86	Metal stick type	

NOTE: The default size of conduit connector is M20x1.5.

## Ratings

Rated voltage (V)	Non-inductive load (A)				Inductive load (A)			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
AC	125	10	3	1.5	10	10	5	2.5
	250	10	2	1	10	10	3	1.5
	400	10	1.5	0.8	3	3	1.5	0.8
DC	8	10	6	3	10	10	6	6
	14	10	6	3	10	10	6	6
	30	6	4	3	6	6	4	4
	125	0.8	0.2	0.2	0.8	0.8	0.2	0.2
	250	0.4	0.1	0.1	0.4	0.4	0.1	0.1

- Note 1. The above values represent constant current.  
 2. The so-called inductive load refers to the load with power factor of 0.4 or more (AC) and the time constant below 7ms (DC).  
 3. The so-called lamp load refers to the load with 10 times of surge current.  
 4. The so-called motor load is the load with 6 times of surge current.

## Specifications

Protection level		IP66
Life	Electrical	More than 500,000 times (AC250V 10A, resistive load)
Operating speed		1mm~0.5m/s
Operating frequency	Mechanical	120 times/min
	Electrical	30 times/min
Rated frequency		50/60Hz
Insulation resistance		100MΩ or more (DC500V Megameter) between homopolars, and between terminals and uncharged metal parts
Contact resistance		5mΩ or less (initial value)
Withstand voltage (EN60947-5-1)	Between homopolar terminals: 2.5kV(quick-action type)/4kV(slow-action type)	
	Between heteropolar terminals: 2.5kV(slow-action type)	
	Between charged metal parts: 4kV	
	Between terminals and uncharged metal parts: 6kV	
Rated insulation voltage (Ui)		600V(EN60947-5-1)
Reverse voltage when on/off		1500V max (EN60947-5-1)
Pollution degree (environmental conditions)		Pollution degree 3 (EN60947-5-1)
Electric shock protection grade		Class I (with ground terminal)
Vibration	Malfunction	10 ~ 55Hz 0.75mm single amplitude
Impact	Duration	1,000m/s <sup>2</sup>
	Malfunction	300m/s <sup>2</sup>
Ambient temperature		Using: -20~+80°C (With no icing)
Ambient humidity		Less than 95% RH
Weight		About 250g

Note 1. The above are initial values.

Note 2. Values of some models may be different from the above, please contact us for details.

\*1. The protection structure is tested based on method predetermined by standard (EN69047-5-1), please confirm the sealing in advance according to the operating environment and conditions.

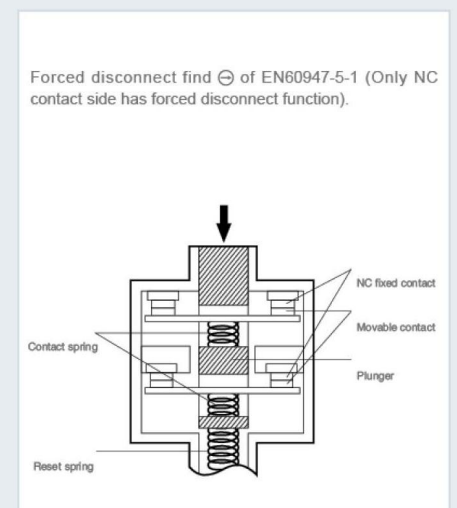
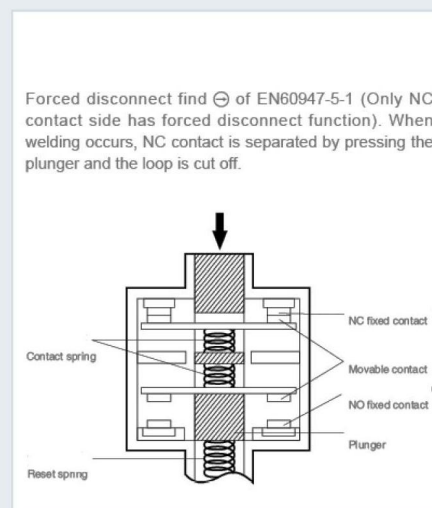
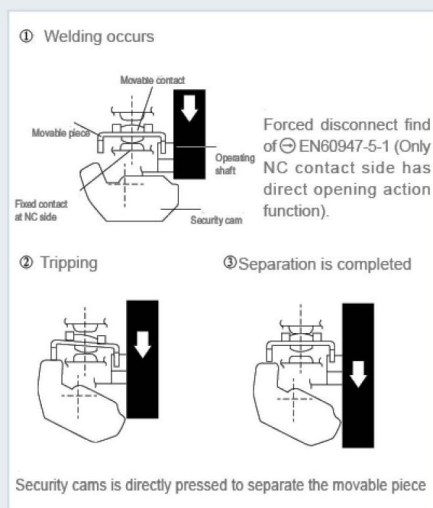
\*2. The conditions of life are the values under the ambient temperature of 5~35°C and humidity of 40 to 70% RH. For other detailed conditions, please contact us.

## Forced Disconnecting Mechanism

■ 1NC and 1NO contacts (quick-action type)

■ 1NC and 1NO contacts (slow-action type)

■ 2NC contacts (slow-action type)





## Contact form

Model	Contact	Contact form	Operation mode	Explanation
SF4B-□1□N	1NC/1NO (Quick-action type)			Only NC contact (11-12) has forced disconnect function and got the certification (terminal No.11-12,13-14 can not be used as different heteropoles)
SF4B-□5□N	1NC/1NO (Slow-action type)			Only NC contact (11-12) has forced disconnect function and got the certification (terminal No.11-12,13-14 can not be used as different heteropoles)
SF4B-□A□N	2NC (Slow-action type)			Two NC contacts (11-12, 21-22) have forced disconnect function and got the certification (terminal No.11-12,21-22 can be used as different heteropoles)

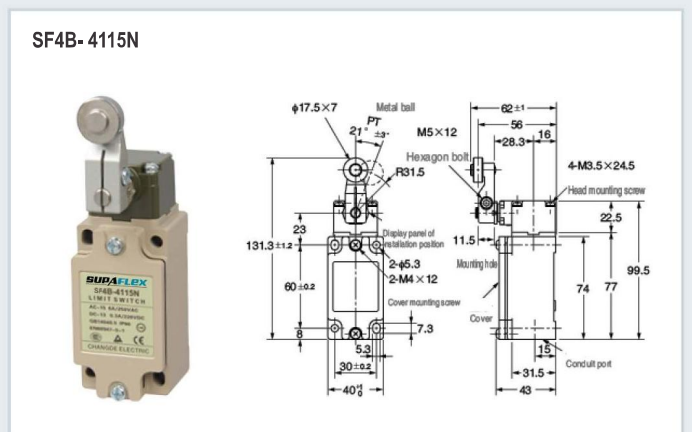
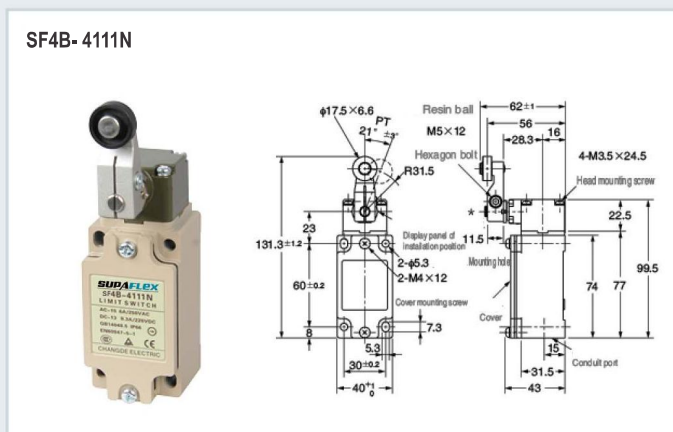
## 动作特性 Operating Characteristics

Model			SF4B-□□11N	SF4B-□□15N	SF4B-□□16N*1	SF4B-□□17N*2	SF4B-□□18N*2	SF4B-□□70N	SF4B-□□71N	SF4B-□□81N	SF4B-□□86N	SF4B-□□87N
Action characteristics												
Action force	OF	Max.	9.41N	9.41N	9.41N	2.12N	9.41N	18.63N	18.63N	1.47N	1.47N	1.47N
Restore force	RF	Min.	1.47N	1.47N	1.47N	0.29N	1.47N	1.96N	1.96N			
Pretravel	PT		21° ± 3°	21° ± 3°	21° ± 3°	21° ± 3°	21° ± 3°	2mm	2mm	15	15	15
	PT (2nd) *3 *5		(45°)	(45°)	(45°)	(45°)	(45°)	(3mm)	(3mm)			
Overtravel	OT	Min.	50°	50°	50°	50°	50°	5mm	5mm			
Poor response travel	MD	Max. *4	12°	12°	12°	12°	12°	1mm	1mm			
Forced disconnected pretravel	DOT	Min. *3*6	35°	35°	35°	35°	35°	3.2mm	3.2mm			
		*4*6	55°	55°	55°	55°	55°					
Forced disconnected force	DOF	Min. *6	19.61N	19.61N	19.61N	19.61N	19.61N	49.03N	49.03N			
Total travel	TT *5		(75°)	(75°)	(75°)	(75°)	(75°)	(7mm)	(7mm)			
Free position	FP	Max.						38mm	51mm			
Action position	OP							35 ± 1mm	48 ± 1mm			

Note: The simultaneity of ON / OFF operation of 2NC contacts have difference, please make sure before using it.

- \*1. The property value when length of lever is 31.5mm.
- \*2. The property value when length of lever is 140mm.
- \*3. Only for slow-action type.
- \*4. Only for quick-action type.
- \*5. Reference values.
- \*6. Please make sure in order to ensure the safe use.

## Appearance and Dimension

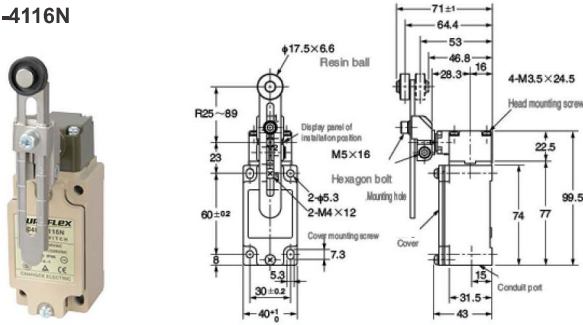


# SF4B-□N Vertical Safety Limit Switch

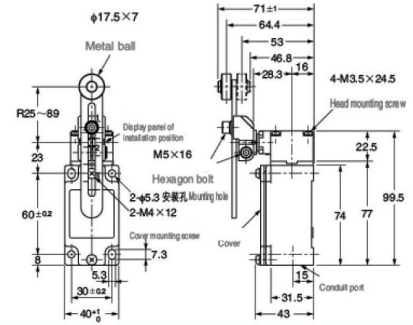


## Appearance and Dimension

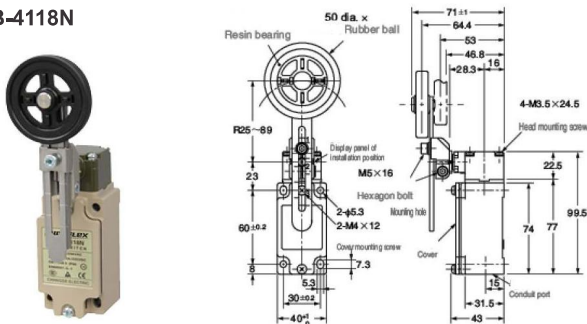
SF4B-4116N



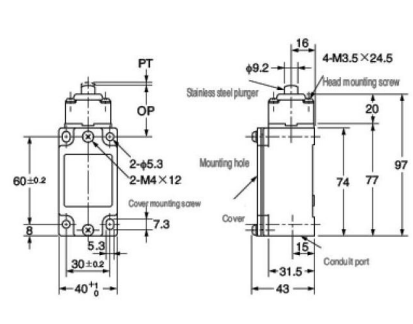
SF4B-4112N



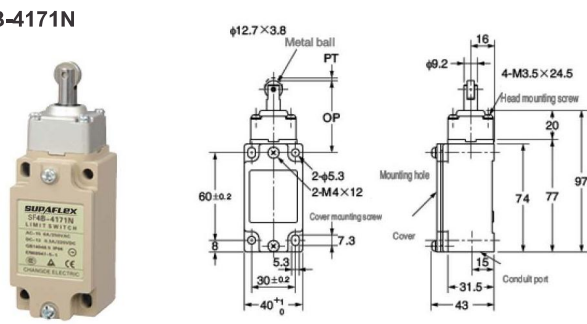
SF4B-4118N



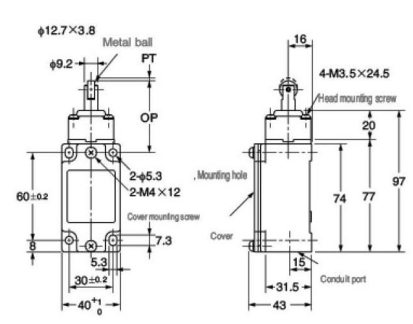
SF4B-4170N



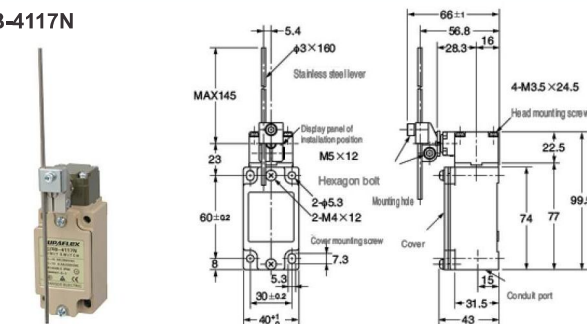
SF4B-4171N



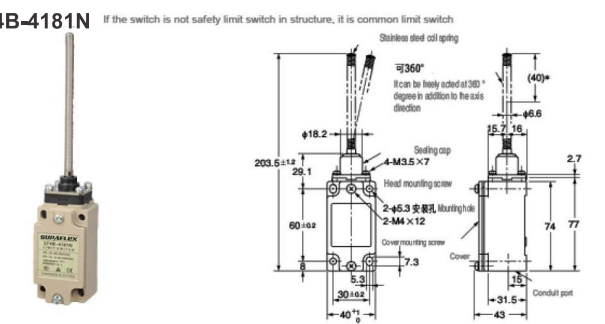
SF4B-4172N



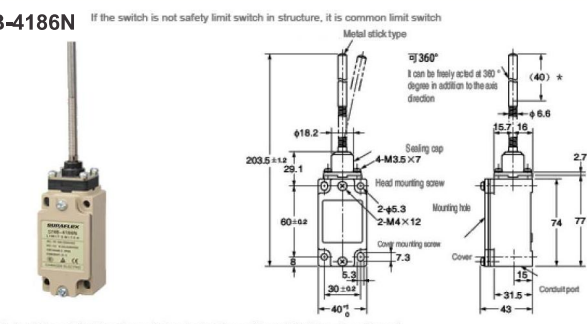
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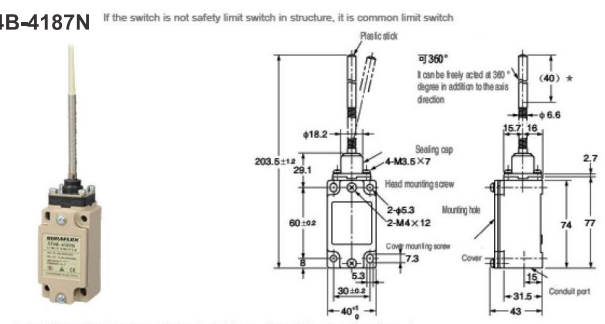
SF4B-4181N



SF4B-4186N



SF4B-4187N

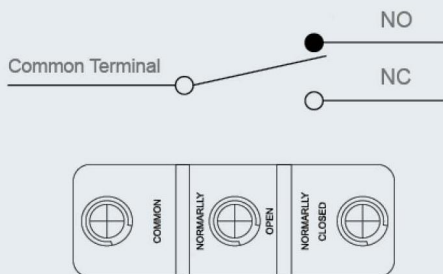




## Features

- Various actuators and some with adjustable operating position (such as CM1701)
- High accuracy wide range of operation speed

## Contact Form



## Ratings

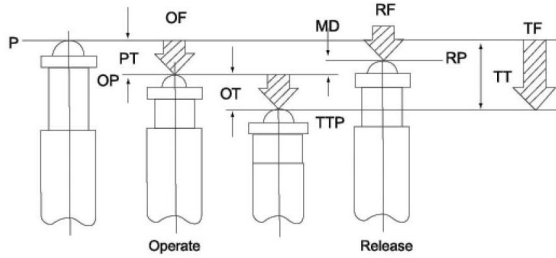
Rated Voltage	Noninductive Load (A)				Inductive Load (A)				Inrush Current	
	Resistance Load		Lamp Load		Inductive Load		Motor Load			
	NC	NO	NC	NO	NC	NO	NC	NO		
125VAC	15		3	1.5	15		5	2.5	30 以下 max.	15 以下 max.
250VAC	15		2.5	1.25	15		3	1.5		
500VAC	3		1.5	0.75	2.5		1.5	0.75		
8VDC	15		3	1.5	15		5	2.5		
14VDC	15		3	1.5	10		5	2.5		
30VDC	6(2)		3	1.5	5		5	2.5		
125VDC	0.4		0.4	0.4	0.05		0.05	0.05		
250VDC	0.2		0.2	0.2	0.03		0.03	0.03		

## Specifications

Operation speed	0.05mm-1m/s
Operating frequency	Electical: 20 operations/min.
Contact resistance	15mΩ max. (initial value)
Insulation resistance	100mΩ min. (at 500VDC)
Dielectric Strength	1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	1500VAC, 50/60 HZ for 1 minute between current-carrying and non-current-carrying metal parts
	1500VAC, 50/60 HZ for 1 minute between each terminal and ground
Vibration	(*10 to 20Hz): 1.5 Vibration amplitude action duration: 10 to 55Hz
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S) Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+80°C (With no icing)
Humidity	General purpose type: 85% RH max., Sealed type: 95% RH max.
Electrical life	500,000 operations above
Weight	About 22 to 58g

## Operating Characteristics

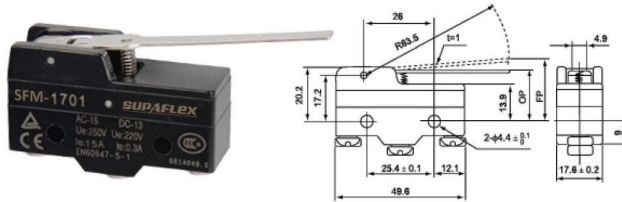
Models	SFM1300	SFM1301	SFM1303 SFM1303M	SFM1305	SFM1306	SFM1307	SFM1308 SFM1308X	SFM1309	SFM1701 SFM1706	SFM1702	SFM1703 SFM1703M	SFM1704 SFM1704M	SFM1705	SFM1743 SFM1743M	
OF (Max.)	350g	300g	300g	350g	350g	350g	350g	350g	70g	160g	100g	160g	10g	160g	
RF (Min.)	114g	50g	50g	114g	114g	114g	114g	114g	14g	28g	22g	42g	3g	42g	
PT (Max.)	0.4mm	4mm	4mm	0.4mm	0.4mm	0.4mm	0.4mm	0.4mm	10mm	5mm	7.1mm	2.7mm	20mm	2.7mm	
OT (Min.)	0.13mm	1.6mm	1.6mm	1.6mm	1.6mm	5.5mm	3.58mm	3.58mm	5.6mm	2mm	4mm	2.4mm	5.6mm	2.4mm	
MD (Max.)	0.05mm	1.3mm	1.3mm	0.05mm	0.05mm	0.05mm	0.05mm	0.05mm	1.27mm	1mm	1.02mm	0.5mm	3mm	0.5mm	
FP (Max.)		20.6mm	31.8mm						28.2mm	24.8mm	36.5mm	32.5mm		43.6mm	
OP(mm)	15.9 ± 0.4	17.4 ± 0.8	28.6 ± 0.8	28.2 ± 0.5	21.5 ± 0.5	21.8	0.8	33.4 ± 1.2	33.4 ± 1.2	19 ± 0.8	19 ± 0.4	30.2 ± 0.8	30.2 ± 0.4	19 ± 0.8	43.1 ± 0.8



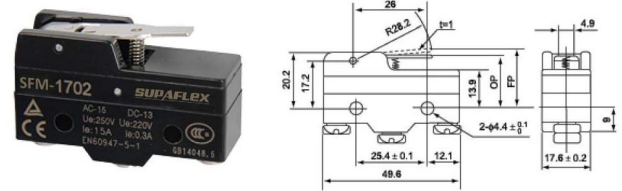
OF: Operating Force  
 RF: Releasing Force  
 TF: Total Force  
 FP: Free Position  
 OP: Operating Position  
 RP: Releasing Position  
 TTP: Total Tavel Position  
 PT: Pre Travel  
 OT: Over Travel  
 MD: Movement Differential  
 TT: Total Tavel

## Appearance and Dimension

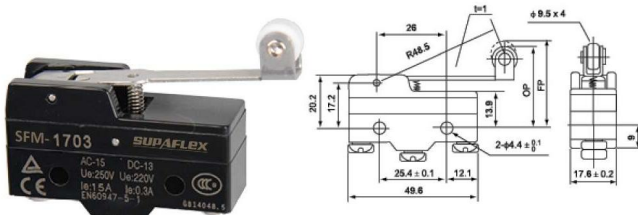
SFM-1701



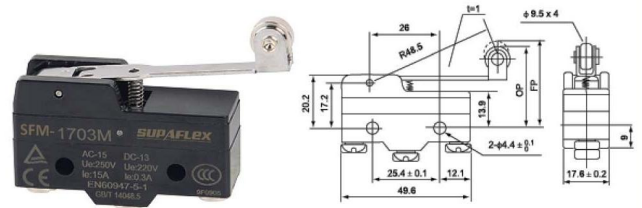
SFM-1702



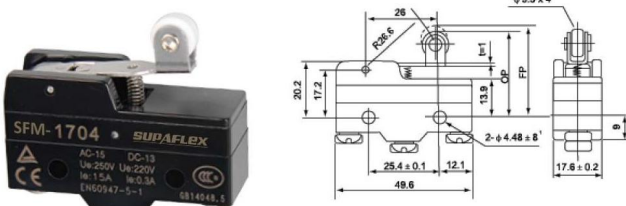
SFM-1703



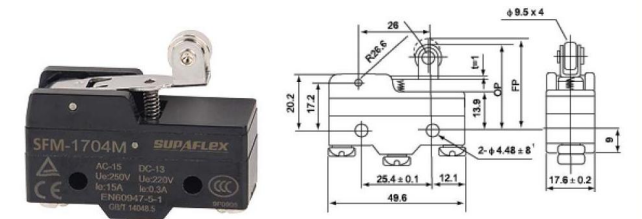
SFM-1703M



SFM-1704



SFM-1704M

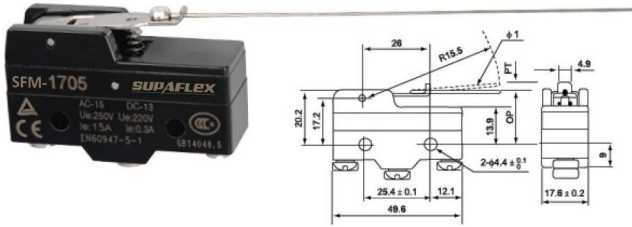




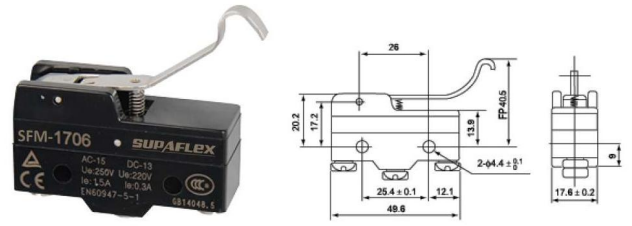


## Appearance and Dimension

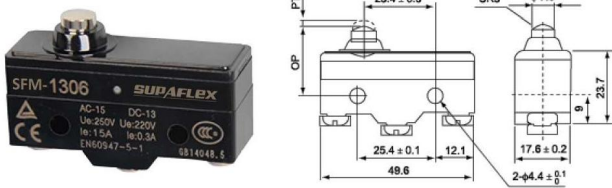
**SFM-1705**



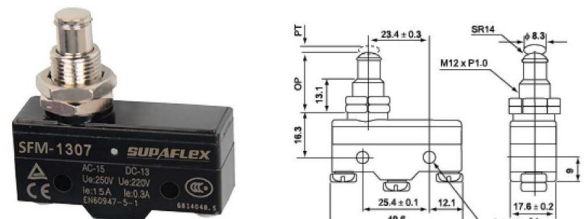
**SFM-1706**



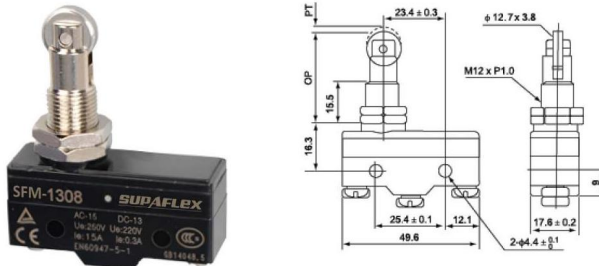
**SFM-1306**



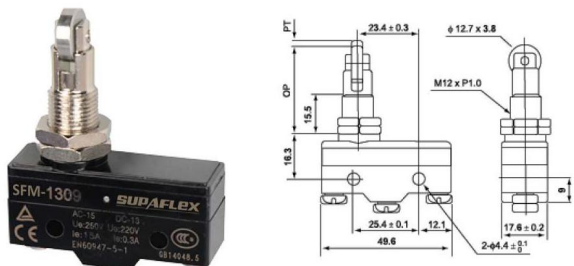
**SFM-1307**



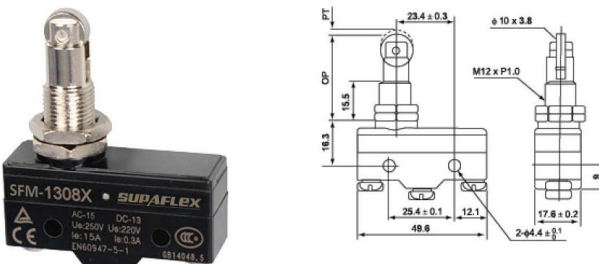
**SFM-1308**



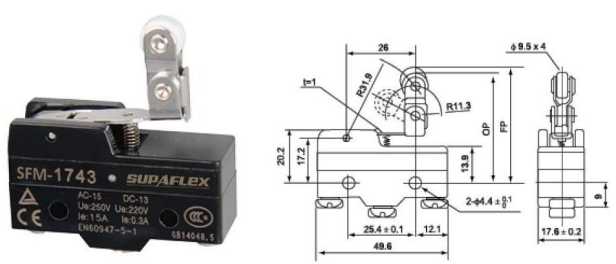
**SFM-1309**



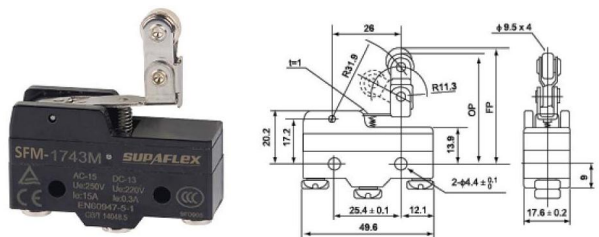
**SFM-1308X**



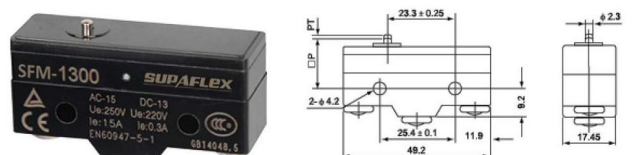
**SFM-1743**



**SFM-1743M**



**SFM-1300**

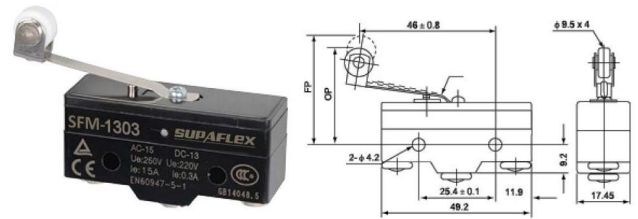


## Appearance and Dimension

**SFM-1301**



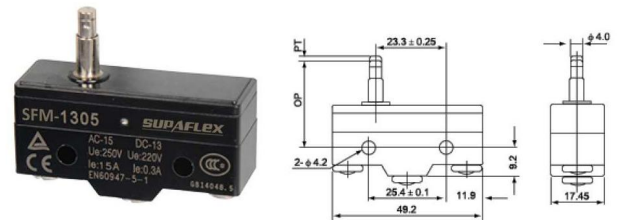
**SFM-1303**



**SFM-1303M**



**SFM-1305**



## Terminal Cover

**SFAP-Y**



**SFAP-C**



**SFAP-B**

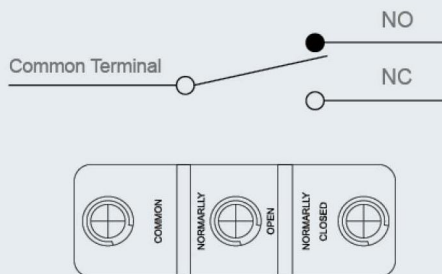




### Features

- Engineering plastics shell for resistant construction
- Various actuators and some with adjustable operating position (such as SFM-1701N)
- High accuracy wide range of operation speed

### Contact Form



### Ratings

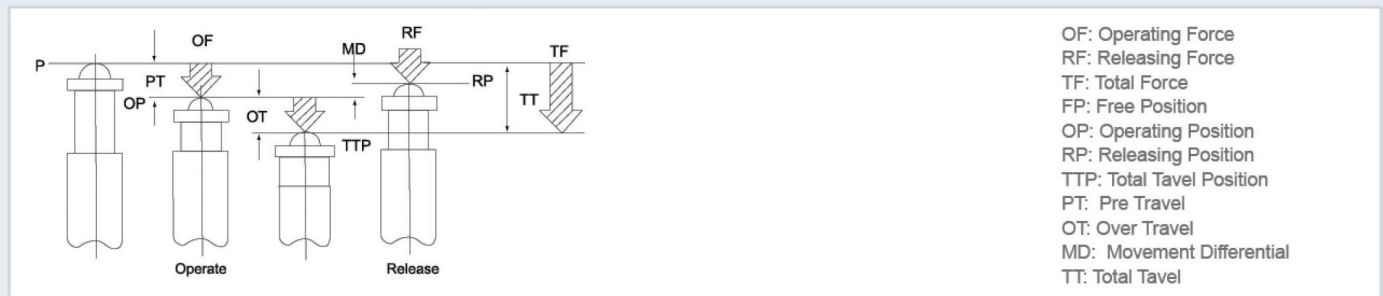
Rated Voltage	Noninductive Load (A)				Inductive Load (A)				Inrush Current	
	Resistance Load		Lamp Load		Inductive Load		Motor Load			
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	15	3	1.5	15	5	2.5	30	15	max.	max.
250VAC	15	2.5	1.25	15	3	1.5				
500VAC	3	1.5	0.75	2.5	1.5	0.75				
8VDC	15	3	1.5	15	5	2.5	max.	max.		
14VDC	15	3	1.5	10	5	2.5				
30VDC	6(2)	3	1.5	5	5	2.5				
125VDC	0.4	0.4	0.4	0.05	0.05	0.05				
250VDC	0.2	0.2	0.2	0.03	0.03	0.03				

### Specifications

Operation speed	(Plunger type) 0.05mm-1m/s
Operating frequency	Electical: 20 operations/min.
Contact resistance	15mΩ max. (initial value)
Insulation resistance	100mΩ min. (at 500VDC)
Dielectric Strength	1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	1500VAC, 50/60 HZ for 1 minute between current-carrying and non-current-carrying metal parts
Vibration	1500VAC, 50/60 HZ for 1 minute between each terminal and ground
	(*10 to 20Hz): 1.5 Vibration amplitude action duration: 10 to 55Hz
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100G'S) Malfunction: 300m/Sec <sup>2</sup> (about 30G'S)
Ambient temperature	Using: -20~+70°C (With no icing)
Humidity	General purpose type: 85% RH max., Sealed type: 95% RH max.
Electrical life	500,000 operations above
Weight	About 22 to 58g

## Operating Characteristics

Models	SFM1300N	SFM1301N	SFM1303N SFM1303NM	SFM1305N	SFM1306N	SFM1307N	SFM1308 SFM1308XN	SFM1309N	SFM1701N SFM1306N	SFM1702N	SFM1703N SFM1703NM	SFM1704N SFM1704NM	SFM1705N	SFM1743N SFM1743NM
OF (Max.)	350g	300g	300g	350g	350g	350g	350g	350g	70g	160g	100g	160g	10g	160g
RF (Min.)	114g	50g	50g	114g	114g	114g	114g	114g	14g	28g	22g	42g	3g	42g
PT (Max.)	0.4mm	4mm	4mm	0.4mm	0.4mm	0.4mm	0.4mm	0.4mm	10mm	5mm	7.1mm	2.7mm	20mm	2.7mm
OT (Min.)	0.13mm	1.6mm	1.6mm	1.6mm	1.6mm	5.5mm	3.58mm	3.58mm	5.6mm	2mm	4mm	2.4mm	5.6mm	2.4mm
MD (Max.)	0.05mm	1.3mm	1.3mm	0.05mm	0.05mm	0.05mm	0.05mm	0.05mm	1.27mm	1mm	1.02mm	0.5mm	3mm	0.5mm
FP (Max.)		20.6mm	31.8mm						28.2mm	24.8mm	36.5mm	32.5mm		43.6mm
OP(mm)	15.9 ± 0.4	17.4 ± 0.8	28.6 ± 0.8	28.2 ± 0.5	21.5 ± 0.5	21.8 ± 0.8	33.4 ± 1.2	33.4 ± 1.2	19 ± 0.8	19 ± 0.4	30.2 ± 0.8	30.2 ± 0.4	19 ± 0.8	43.1 ± 0.8



## Appearance and Dimension

<p><b>SFM-1701N</b></p>	<p><b>SFM-1702N</b></p>
<p><b>SFM-1703N</b></p>	<p><b>SFM-1703NM</b></p>
<p><b>SFM-1704N</b></p>	<p><b>SFM-1704NM</b></p>
<p><b>SFM-1705N</b></p>	<p><b>SFM-1706N</b></p>



## Appearance and Dimension

**SFM-1306N**

**SFM-1307N**

**SFM-1308N**

**SFM-1309N**

**SFM-1308XN**

**SFM-1743N**

**SFM-1743NM**

**SFM-1300N**

**SFM-1301N**

**SFM-1303N**

**SFM-1303NM**

**SFM-1305N**

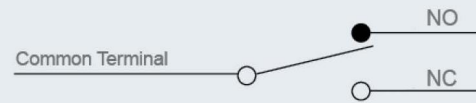
# SFZ-7 Horizontal Limit Switch



## Features

- Various actuators and some with adjustable operating position (such as SFZ-7121)
- Shell covered with intensive plastic for water-proof and oil-proof. The mechanical strength is better than CM series of horizontal limit switch

## Contact Form



## Ratings

Rated Voltage	Noninductive Load (A)				Inductive Load (A)			
	Resistance Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	10	3	1.5	10	5	2.5		
250VAC	10	2.5	1.25	10	3	1.5		
480VAC	3	1.5	0.75	2.5	1.5	0.75		
8VDC	10	3	1.5	6	6	5		
14VDC	10	3	1.5	6	6	5		
30VDC	8	3	1.5	6	5	2.5		
125VDC	0.5	0.4	0.4	0.05	0.05	0.05		
250VDC	0.25	0.2	0.2	0.03	0.03	0.03		

NOTES: 1. Inductive load has a power factor of 0.4 min.(AC) and a time constant of 7 msec.max.(DC).  
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.  
 3. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

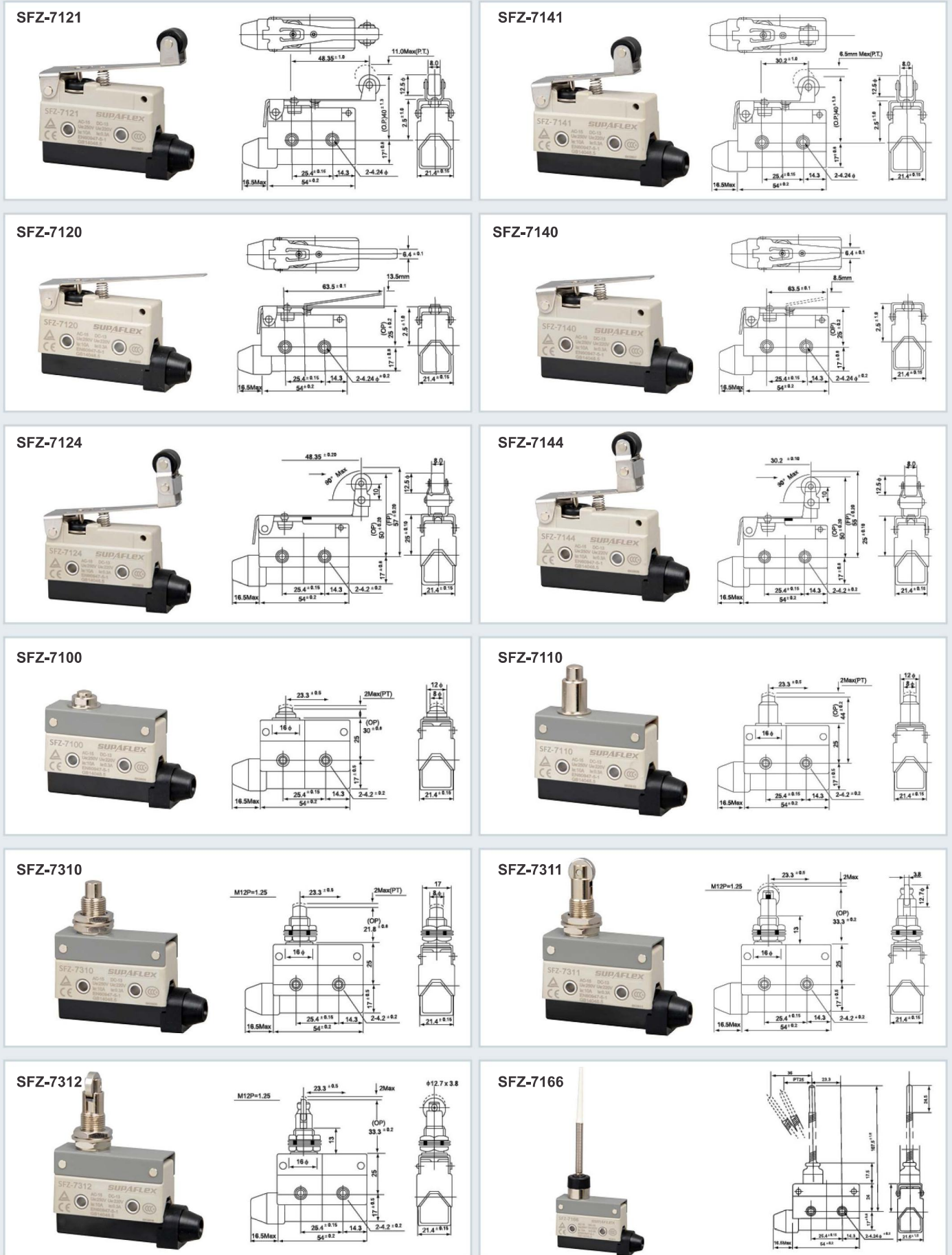
## Specifications

Operation speed	0.05mm-0.5m/s
Operating frequency	Electrical: 20 operations/min.
Contact resistance	25mΩ max. (initial value)
Insulation resistance	100mΩ above(at 500VDC)
Dielectric strength	1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
Vibration	1500VAC, 50/60 Hz for 1 minute between each terminal and ground
	Malfunction Duration: 10-55Hz, 1.5mm double amplitude
Shock	Mechanical durable: 1,000m/Sec <sup>2</sup> (about 100g's) Malfunction: 300m/Sec <sup>2</sup> (about 30g's)
Ambient temperature	Using: -20~+70°C (With no icing)
Humidity	< 95% RH
Electrical life	500,000 operations above
Weight	About 60g

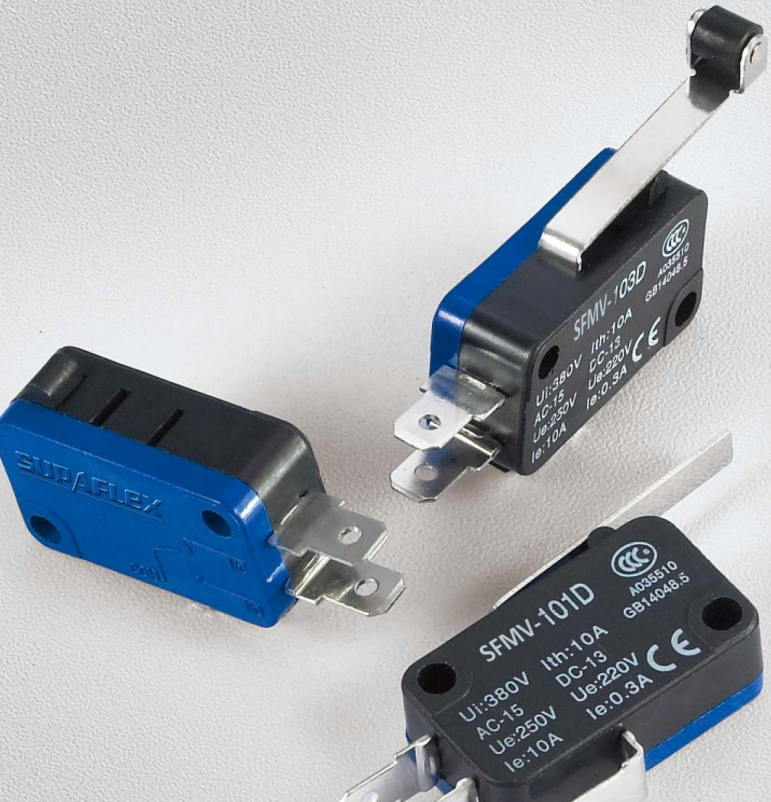
## Operating Characteristics

Model	SFZ-7	SFZ-7100	SFZ-7110	SFZ-7310	SFZ-7311	SFZ-7312	SFZ-7120	SFZ-7140	SFZ-7121	SFZ-7141	SFZ-7124	SFZ-7144	SFZ-7166
Operating force	OF (Max.)	600g	600g	600g	600g	600g	150g	220g	180g	240g	200g	280g	120g
Release force	RF (Min.)	100g	100g	100g	100g	100g	40g	60g	50g	80g	60g	100g	
Pre-travel	PT (Max.)	2.0mm	2.0mm	2.0mm	2.0mm	2.0mm	13.5mm	8.5mm	11.0mm	6.5mm	11mm	6.5mm	250mm
Over travel	OT (Min.)	0.8mm	5.0mm	6.0mm	6.0mm	6.0mm	4.0mm	2.5mm	3.0mm	2.0mm	3.0mm	2.0mm	11mm
Movement differential	MD (Max.)	0.8mm	0.8mm	0.8mm	0.8mm	0.8mm	3.2mm	2.0mm	2.4mm	1.5mm	2.4mm	1.5mm	
Operating position	OP(mm.)	30.5 ± 0.8mm	44 ± 1.2mm	21.8 ± 1.2mm	33.3 ± 1.2mm	33.3 ± 1.2mm	25 ± 1mm	25 ± 1mm	40 ± 1mm	40 ± 1mm	50 ± 1.2mm	50 ± 1.2mm	
Free Position	FP						35mm	32mm		46mm		56mm	

## Appearance and Dimension



# SFMV10 Miniature Snap Action Switch



## Ratings

Item	Rated Voltage	Noninductive Load (A)				Inductive Load (A)				Inrush Current	
		Resistance Load		Lamp Load		Inductive Load		Motor Load			
		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
Spec.	250VAC	10		1.5		6		2		24 以下 max.	
	8VDC	10		3		6		3			
	30VDC	6		3		6		3			
	125VDC	0.3		0.1		0.6		0.1			
	250VDC	0.3		0.05		0.3		0.05			

## Specifications

Item	Type	CMV 10 type
Operation speed		0.05mm~1m/s( Button type)
Operating frequency		Electrical: 20 operations/min
Insulation resistance		100mΩ above(at 500VDC)
Contact resistance		15mΩ max. (initial value)
Withstand voltage	Non-continuous terminals	1000VAC, 50/60 Hz for 1 minute
	current-carrying and non-current-carrying metal parts, Between terminal and earthing	1500VAC, 50/60 Hz for 1 minute
Vibration	Misoperation	10 to 55Hz, 1.5mm pairs swing
Shock	Durable	Maximum 1000 m/S <sup>2</sup> (100G)
	Misoperation	Maximum 200 m/S <sup>2</sup> (100G)
	Electrical	More than 300000 times
Temperature		Using: -20~+70°C (With no icing)
Humidity		(+5~+35°C) Below 85% RH

## Model Number Structure

SFMV 10 0 D

①      ②      ③

Item	Code	Description
① Rated Current	10	10A
② Head and driving rod	0	Button type
	1	Long handle type
	2	Short shank type
	3	Long pulley type
	4	Short pulley type
	5	Longer handle type
③ Terminal specifications	C	#250 #250 terminal
	D	#187 #187 terminal

## Operating Characteristics

Models	SFMV100D	SFMV101D	SFMV102D	SFMV103D	SFMV104D	SFMV105D	SFMV106D
OF (Max)	2.4N	1.23N	2.4N	1.23N	2.7N	0.69N	1.2N
RF (Min)	0.49N	0.14N	0.49N	0.14N	0.49N	0.06N	0.14N
PT (Max)	1.2mm	4.0mm	1.6mm	4.0mm	1.5mm	9.0mm	4.0mm
OT (Min)	1.0mm	1.6mm	0.8mm	1.6mm	0.8mm	2.0mm	1.5mm
MD (Max)	0.4mm	1.5mm	0.6mm	1.5mm	0.6mm	2.8mm	1.5mm
OP (mm.)	14.7 ± 0.4mm	15.2 ± 1.2mm	15.2 ± 0.5mm	20.7 ± 1.2mm	20.7 ± 0.6mm	15.2 ± 3mm	18.7 ± 1.2mm

## Appearance and Dimension

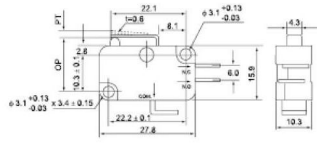




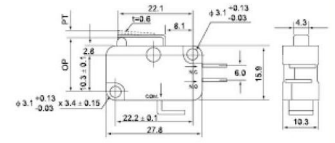


## Appearance and Dimension

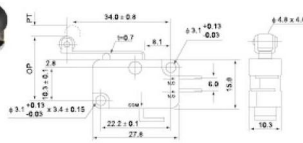
**SFMV102D**



**SFMV102C**

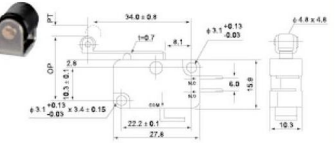


**SFMV103D**



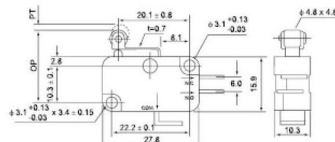
Optional Metal idler wheel

**SFMV103C**



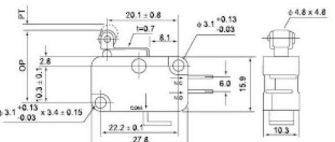
Optional Metal idler wheel

**SFMV104D**



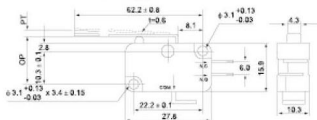
Optional Metal idler wheel

**SFMV104C**

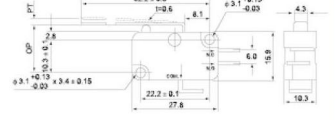


Optional Metal idler wheel

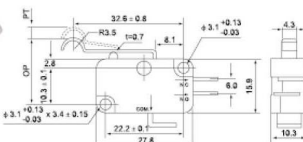
**SFMV105D**



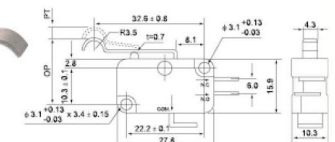
**SFMV105C**



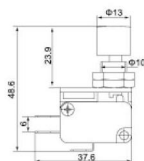
**SFMV106D**



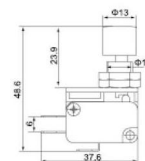
**SFMV106C**



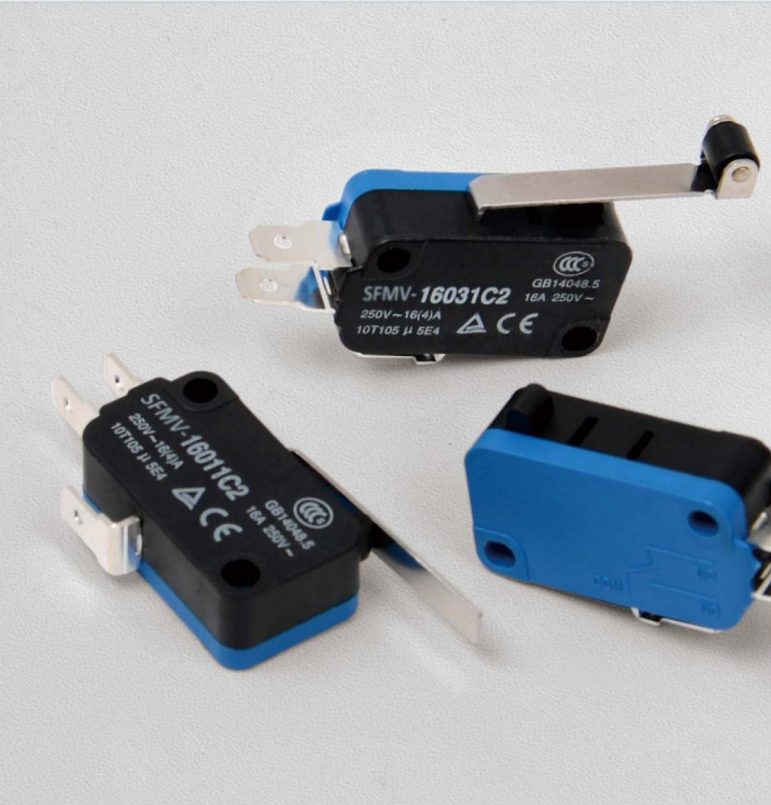
**SFMVP10-D**



**SFMVP10-C**



# SFMV16 Miniature Snap Action Switch



### Model Number Structure

SFMV 16 00 1 C2

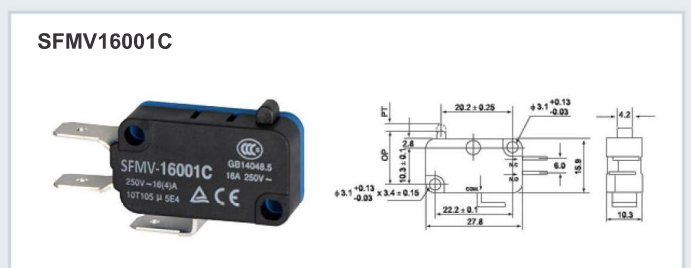
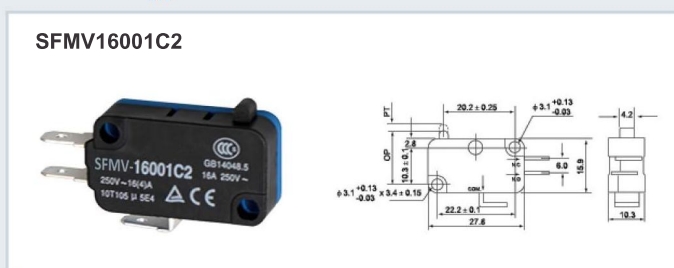
①            ②            ③            ④

Item	Code	Description
① Rated Current	16	16A
② Head and driving rod	00	Button type
	01	Long handle type
	02	Short shank type
	03	Long pulley type
	04	Short pulley type
	05	Longer handle type
	06	Crank type
③ Contact form	1	— 1NO/1NC
	2	— 1NC
	3	— 1NO
④ Terminal specifications	C	#250 terminal
	C2	#187 terminal

### Operating Characteristics

Model	SFMV16	SFMV16001C2	SFMV16011C2	SFMV16021C	SFMV16031C2	SFMV16041C2	SFMV16051C2	SFMV16061C
Operating force	PT (Max.)	2.4N	1.23N	2.4N	1.23N	2.7N	0.69N	1.2N
Release force	RF (Min.)	0.49N	0.14N	0.49N	0.14N	0.49N	0.06N	0.14N
Pre-travel	PT (Max.)	1.2mm	4.0mm	1.6mm	4.0mm	1.5mm	9.0mm	4.0mm
Over travel	OT (Min.)	1.0mm	1.6mm	0.8mm	1.6mm	0.8mm	2.0mm	1.5mm
Movement differential	MD (Max.)	0.4mm	1.5mm	0.6mm	1.5mm	0.6mm	2.8mm	1.5mm
Operating position	OP(mm.)	14.7 ± 0.4mm	15.2 ± 1.2mm	15.2 ± 0.5mm	20.7 ± 1.2mm	20.7 ± 0.6mm	15.2 ± 3mm	18.7 ± 1.2mm

### Appearance and Dimension



### Ratings

Item	Rated Voltage	Noninductive Load (A)				Inductive Load (A)				Inrush Current	
		Resistance Load		Lamp Load		Inductive Load		Motor Load			
		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
16A	250VAC	16		2		10		3		40 以下 max.	
	8VDC	16		4		10		6			
	30VDC	10		4		10		4			
	125VDC	0.6		0.1		0.6		0.1			
	250VDC	0.3		0.05		0.3		0.05			

### Specifications

Item	Type	SFMV16 type
Operation speed		0.05mm~1m/s( Button type)
Operating frequency		Electrical: 20 operations/min
Insulation resistance		100mΩ above(at 500VDC)
Contact resistance		15mΩ max. (initial value)
Withstand voltage	Non-continuous terminals	1000VAC, 50/60 Hz for 1 minute
	current-carrying and non-current-carrying metal parts, Between terminal and earthing	2000VAC, 50/60 Hz for 1 minute
Vibration	Misoperation	10 to 55Hz, 1.5mm pairs swing
Shock	Durable	Maximum 1000 m/S <sup>2</sup> (100G)
	Misoperation	Maximum 200 m/S <sup>2</sup> (100G)
Life	Electrical	More than 300000 times
	Temperature	Using: -20~+70°C (With no icing)
	Humidity	(+5~+35°C) Below 85% RH



## Appearance and Dimension

**SFMV16011C2**

Technical drawing showing dimensions: PT, OP, 35.8 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03.

**SFMV16011C**

Technical drawing showing dimensions: PT, OP, 35.8 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03.

**SFMV16021C**

Technical drawing showing dimensions: PT, OP, 22.1, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03.

**SFMV16021C2**

Technical drawing showing dimensions: PT, OP, 22.1, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03.

**SFMV16031C2**

Technical drawing showing dimensions: PT, OP, 34.9 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03, 4.8 × 4.8.

Custom Made Metal idler wheel

**SFMV16031C**

Technical drawing showing dimensions: PT, OP, 34.9 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03, 4.8 × 4.8.

Custom Made Metal idler wheel

**SFMV16041C2**

Technical drawing showing dimensions: PT, OP, 20.1 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03, 4.8 × 4.8.

Custom Made Metal idler wheel

**SFMV16041C**

Technical drawing showing dimensions: PT, OP, 20.1 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03, 4.8 × 4.8.

Custom Made Metal idler wheel

**SFMV16051C2**

Technical drawing showing dimensions: PT, OP, 62.2 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03.

**SFMV16051C**

Technical drawing showing dimensions: PT, OP, 62.2 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03.

**SFMV16061C**

Technical drawing showing dimensions: PT, OP, 32.8 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03.

**SFMV16061C2**

Technical drawing showing dimensions: PT, OP, 32.8 ± 0.8, 10.3 ± 0.1, 2.8, 10.3 ± 0.1, 3.4 ± 0.15, 22.2 ± 0.1, 27.8, 8.1, 6.0, 15.9, 4.3, 10.3, 0.3 ± 0.13, -0.03.

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