

FEATURES

- Wide variety of actuators
- High breaking capacity(15A)
- High precision
- Wide operating speed range
- TM Series offer Screw Type terminals, Solder Type terminal and Tab Type terminal to choose from.
- -A means it's the Solder type terminal, -C means it's the Tab type terminal and default is the Screw type terminal.

SPECIFICATIONS

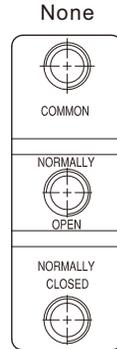
RATINGS

Rated voltage (V)	Non-inductive load(A)			Inductive load(A)			Inrush current (A)	
	Resistive load		Lamp load	Inductive load		Motor load	NC	NO
	NC	NO	NC	NO	NC	NO		
125 VAC	15	3	1.5	15	5	2.5	30 max.	15 max.
250 VAC	15	2.5	1.25	15	3	1.5		
500 VAC	3	1.5	0.75	2.5	1.5	0.75		
8 VDC	15	3	1.5	15	5	2.5		
14 VDC	15	3	1.5	10	5	2.5		
30 VDC	6	3	1.5	5	5	2.5		
125 VDC	0.4	0.4	0.4	0.05	0.05	0.05		
250 VDC	0.2	0.2	0.2	0.03	0.03	0.03		

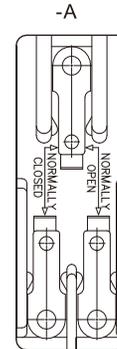
CHARACTERISTICS

Operating speed	0.01mm to 1m/sec
Operating frequency	Mechanically:240 operations/min Electrically:20 operations/min
Contact resistance	15mΩ max.(initial)
Insulation resistance	100MΩ max.(at 500 VDC)
Dielectric strength	1,000 VAC,50/60Hz, for 1 minute be-tween non-continuos terminals; 2,000 VAC, 50/60HZ,for 1 minute be-tween current-carrying part and ground
Vibration	Mechanical durability: 10 to 55Hz, 1.5mm double amplitude
Shock	Mechanical durability:approx. 1,000m/sec ² (approx. 100G's) Malfunction durability:Approx 300m/sec ² (approx. 30G's)
Ambient temperature	General purpose type:-25° C to +80° C Sealed type:-15° C to +80° C
Humidity	General purpose type:85% RH max. Sealed type:95% RH max.
Service life	Mechanically:20,000,000 operations min. Electrically:500,000 operations min.
Weight	Approx. 22 to 58g
IP Rating	Normal Type IP00 Sealed Type: IP62

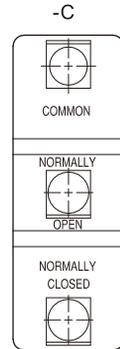
Screw type



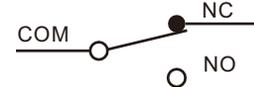
Solder type



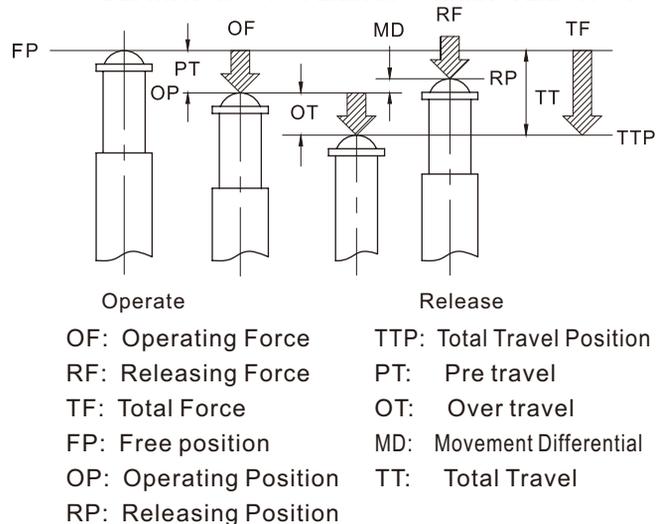
Tab type



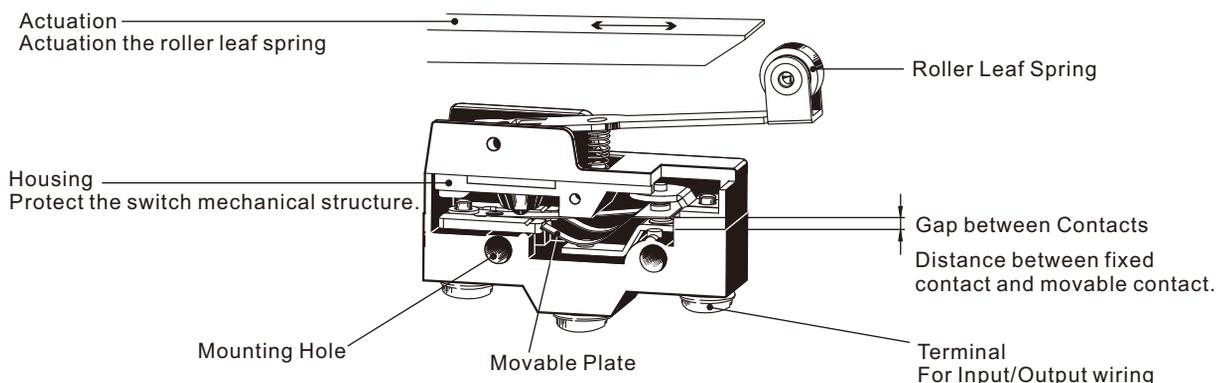
CONTACT CONFIGURATION



DEFINITIONS OF OPERATING CHARACTERISTICS:



ILLUSTRATION

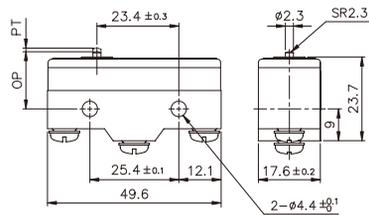


OPERATION CHARACTERISTICS

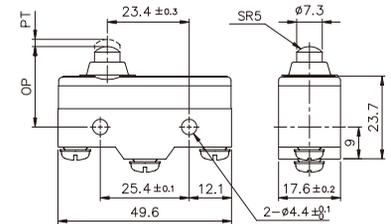
Type	TM-1300	TM-1301	TM-1303	TM-1305	TM-1306	TM-1307	TM-1308	TM-1309
OF Max.	350g	300g	300g	350g	350g	350g	350g	350g
RF Min.	114g	50g	50g	114g	114g	114g	114g	114g
PT Max.	0.4mm	4mm	4mm	0.4mm	0.4mm	0.4mm	0.4mm	0.4mm
OT Min.	0.13mm	1.6mm	1.6mm	1.6mm	1.6mm	5.5mm	3.58mm	3.58mm
MD Max.	0.05mm	1.3mm	1.3mm	0.05mm	0.05mm	0.05mm	0.05mm	0.05mm
FP Max.		20.6mm	31.8mm					
OP	15.9±0.4mm	17.4±0.8mm	28.6±0.8mm	28.2±0.5mm	21.5±0.5mm	21.8±0.8mm	33.4±1.2mm	33.4±1.2mm

DIMENSIONS

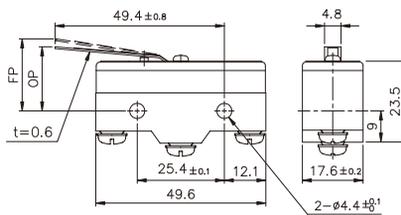
TM-1300



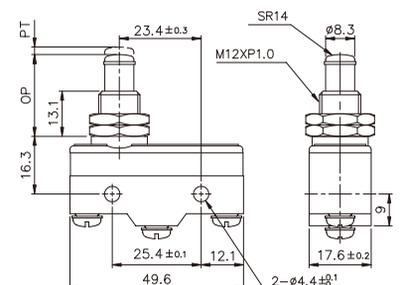
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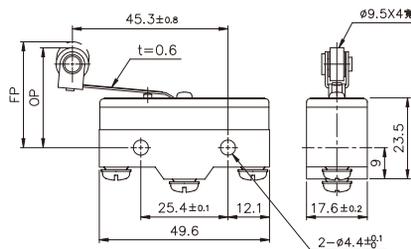
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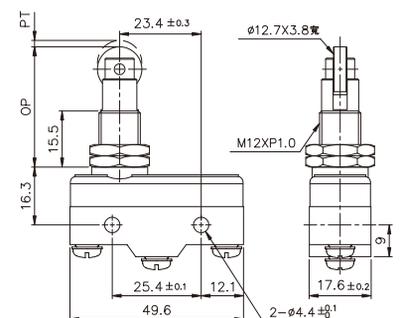
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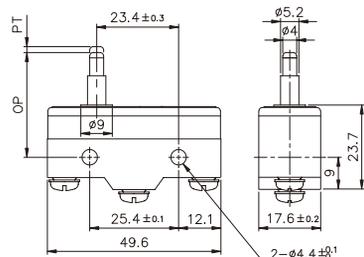
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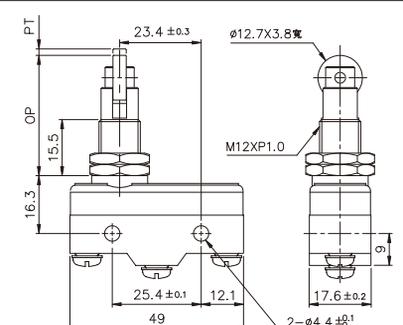
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TM-1305



TM-1309

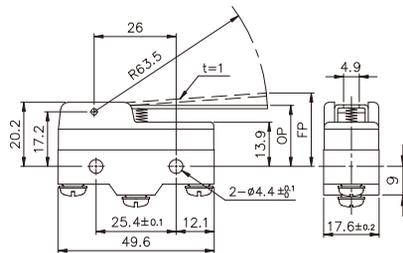


OPERATION CHARACTERISTICS

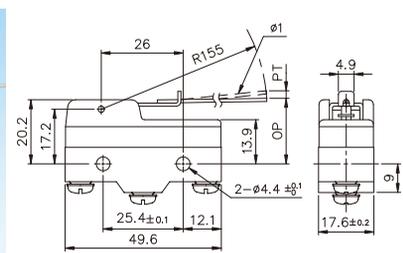
Type	TM-1701	TM-1702	TM-1703	TM-1704	TM-1705	TM-1707	TM-1709	TM-1743
OF Max.	70g	160g	100g	160g	10g	170g	100g	160g
RF Min.	14g	28g	22g	42g	3g	42g	21g	42g
PT Max.	10mm	5mm	7.1mm	2.7mm	20mm	2.7mm	7.3mm	2.7mm
OT Min.	5.6mm	2mm	4mm	2.4mm	5.6mm	2.4mm	4mm	2.4mm
MD Max.	1.27mm	1mm	1.02mm	0.5mm	4mm	0.5mm	1.6mm	0.5mm
FP Max.	28.2mm	24.8mm	36.5mm	32.5mm		33.3mm	47.5mm	43.6mm
OP	19±0.8mm	19±0.4mm	30.2±0.8mm	30.2±0.4mm	19±0.8mm	31±0.4mm	41.2±0.8mm	41.3±0.8mm

DIMENSIONS

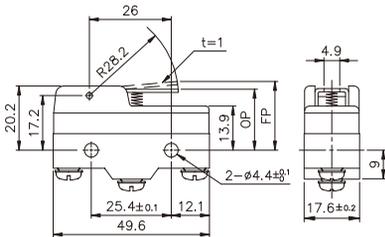
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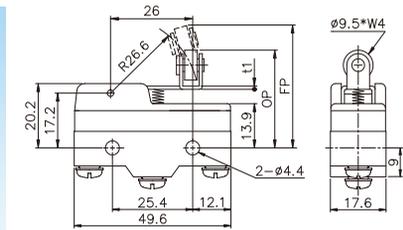
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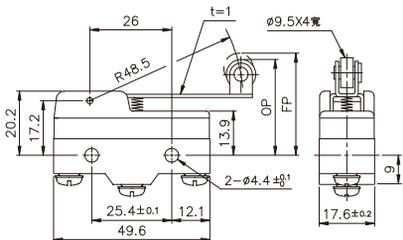
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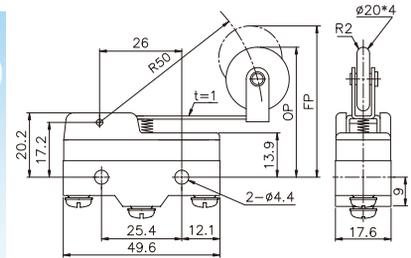
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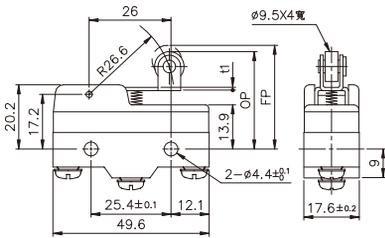
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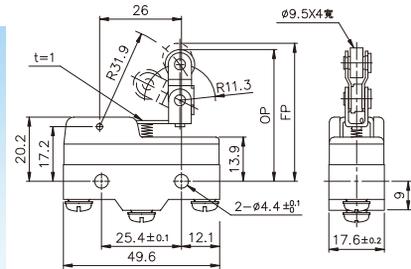
TM-1709



TM-1704



TM-1743

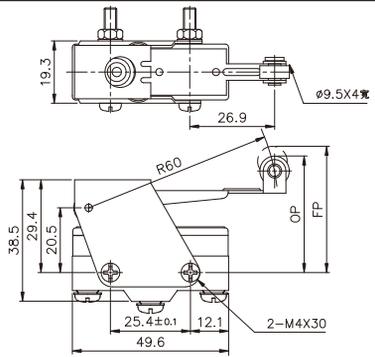


OPERATION CHARACTERISTICS

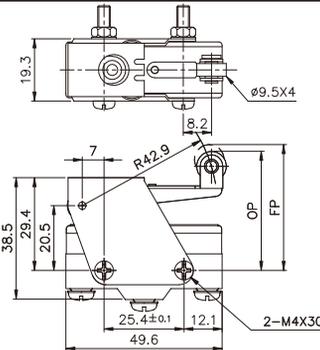
Type	TM-1401	TM-1501
OF Max.	500g	600g
RF Min.	170g	300g
PT Max.	5mm	3mm
OT Min.	12.7mm	6mm
MD Max.	2.2mm	2mm
FP Max.	44.5±1.6mm	41±1.6mm
OP	40.4±1.6mm	40.4±1.6mm

DIMENSIONS

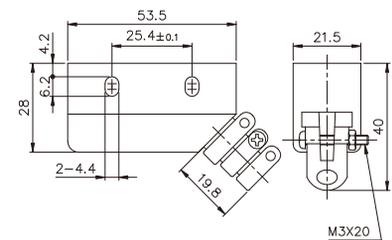
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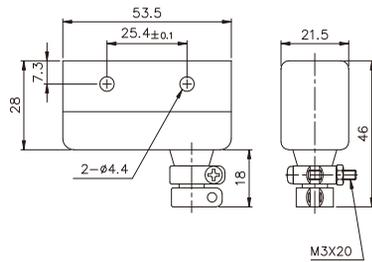
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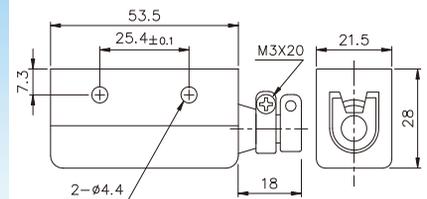
TAP-Y



TAP-Z

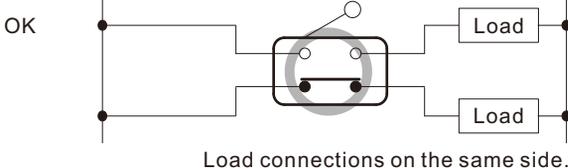
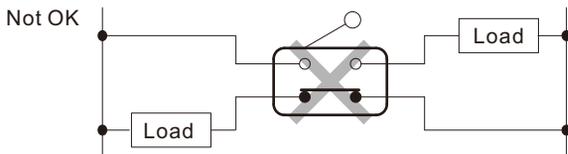


TAP-X



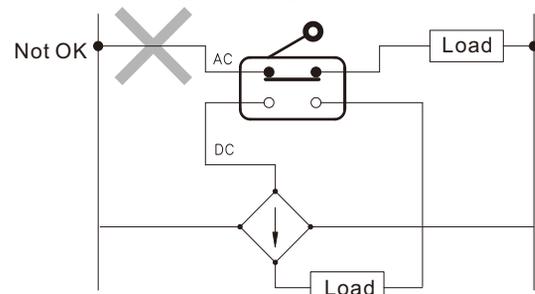
LOAD CONNECTION

The contact of the switch can not be connected the opposite pole or different type of power supply. Polarity can not be reversed. When polarity is reversed, the power supply will be short circuited.

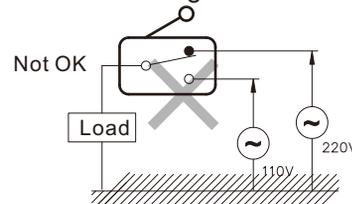


Loads cannot be connected to two different contacts. This will cause damages to the insulation and reduce lifetime.

Connecting to different type of power supply DC and AC can not be mixed.



Avoid connection with voltage circuit between contacts to avoid melting.



Contact Protection Circuit

It is used to extend the lifetime of the contacts, to prevent noise and carbon deposition caused by electric arc. Improper use may result in the opposite effects. When using the contact protection circuit, the reaction time may be longer.

FEATURES

- Wide variety of actuators
- High breaking capacity(20A)
- High precision
- Wide operating speed range
- TM Series offer Screw Type terminals, Solder Type terminal and Tab Type terminal to choose from.
- -A means it's the Solder type terminal, -C means it's the Tab type terminal and default is the Screw type terminal.

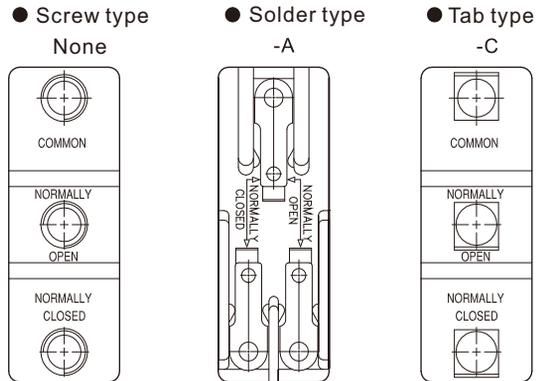
SPECIFICATIONS

RATINGS

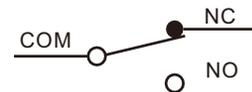
Rated voltage (V)	Non-inductive load(A)				Inductive load(A)				Inrush current (A)	
	Resistive load		Lamp load		Inductive load		Motor load			
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	20		7.5		20		12.5		30 max.	15 max.
250 VAC	20		7.5		20		8.3			
500 VAC	5		2		3		2			
8 VDC	20	3	1.5		20		12.5		30 max.	15 max.
14 VDC	20	3	1.5		15		12.5			
30 VDC	6	3	1.5		5		5			
125 VDC	0.4	0.4	0.4		0.05		0.05			
250 VDC	0.2	0.2	0.2		0.03		0.03			

CHARACTERISTICS

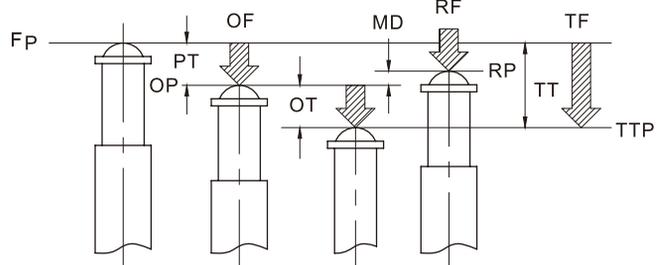
Operating speed	0.01mm to 1m/sec
Operating frequency	Mechanically:240 operations/min Electrically:20 operations/min
Contact resistance	15mΩ max.(initial)
Insulation resistance	100MΩ max.(at 500 VDC)
Dielectric strength	1,000 VAC,50/60Hz, for 1 minute between non-continuos terminals; 2,000 VAC, 50/60HZ, for 1 minute between current-carrying part and ground
Vibration	Mechanical durability: 10 to 55Hz, 1.5mm double amplitude
Shock	Mechanical durability:approx. 1,000m/sec ² (approx. 100G's) Malfunction durability:Approx 300m/sec ² (approx. 30G's)
Ambient temperature	General purpose type:-25 C to +80 C Sealed type:-15 C to +80 C
Humidity	General purpose type:85% RH max. Sealed type:95% RH max.
Service life	Mechanically:1,000,000 operations min. Electrically:500,000 operations min.
Weight	Approx. 22 to 58g
IP Rating	Normal Type IP00 Sealed Type: IP62



CONTACT CONFIGURATION

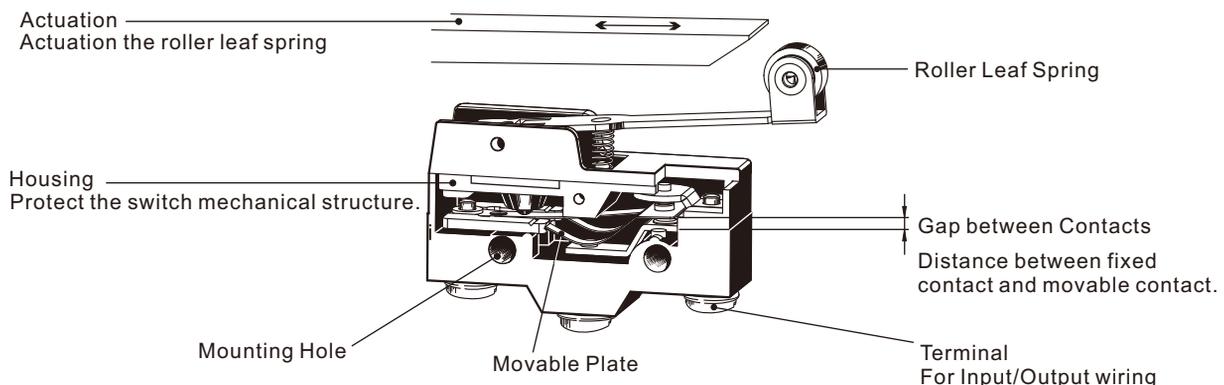


DEFINITIONS OF OPERATING CHARACTERISTICS:



- Operate
- OF: Operating Force
 - RF: Releasing Force
 - TF: Total Force
 - FP: Free position
 - OP: Operating Position
 - RP: Releasing Position
- Release
- TTP: Total Travel Position
 - PT: Pre travel
 - OT: Over travel
 - MD: Movement Differential
 - TT: Total Travel

ILLUSTRATION

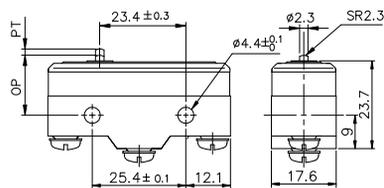


OPERATION CHARACTERISTICS

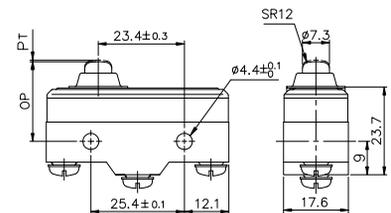
Type	TM-1300-2	TM-1301-2	TM-1303-2	TM-1305-2	TM-1306-2	TM-1307-2	TM-1308-2	TM-1309-2
OF Max.	650g	350g	350g	650g	650g	650g	650g	650g
RF Min.	200g	50g	50g	200g	200g	200g	200g	200g
PT Max.	0.7mm	4mm	4mm	0.7mm	0.7mm	0.7mm	0.7mm	0.7mm
OT Min.	0.13mm	1.6mm	1.6mm	1.6mm	1.6mm	5.5mm	3.58mm	3.58mm
MD Max.	0.2mm	1.3mm	1.3mm	0.05mm	0.2mm	0.2mm	0.2mm	0.2mm
FP Max.		20.6mm	31.8mm					
OP	15.9±0.4mm	17.4±0.8mm	28.6±0.8mm	28.2±0.5mm	21.5±0.5mm	21.8±0.8mm	33.4±1.2mm	33.4±1.2mm

DIMENSIONS

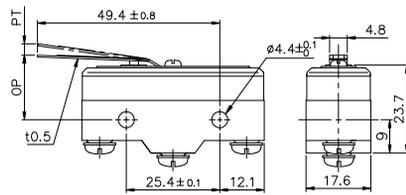
TM-1300-2



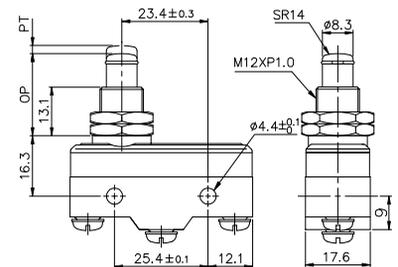
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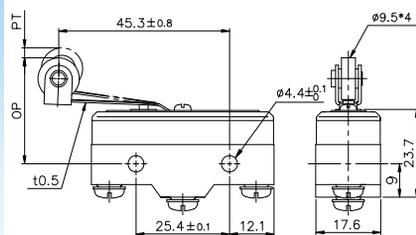
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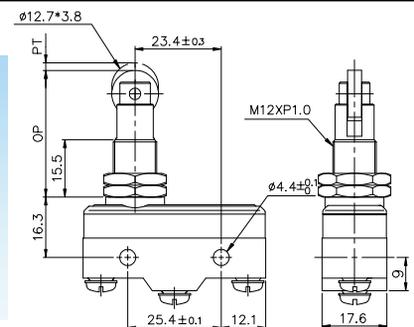
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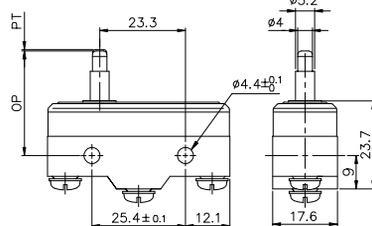
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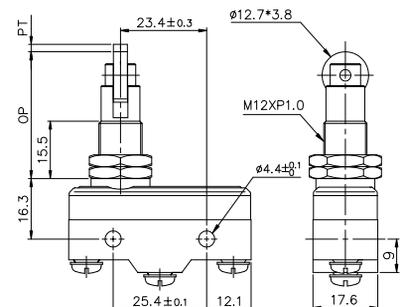
TM-1308-2



TM-1305-2



TM-1309-2

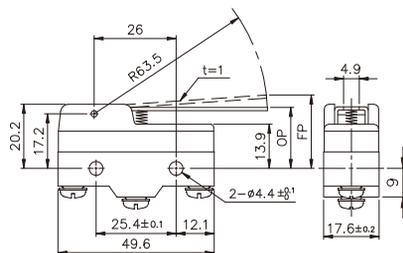


OPERATION CHARACTERISTICS

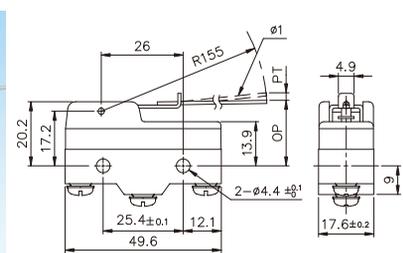
Type	TM-1701-2	TM-1702-2	TM-1703-2	TM-1704-2	TM-1705-2	TM-1707-2	TM-1709-2	TM-1743-2
OF Max.	80g	160g	120g	180g	20g	170g	70g	180g
RF Min.	14g	42g	22g	42g	5g	42g	34g	42g
PT Max.	10mm	6.5mm	7.1mm	2.7mm	20mm	2.7mm	6.3mm	2.7mm
OT Min.	5.6mm	1.2mm	4mm	2.4mm	5.6mm	2.4mm	6mm	2.4mm
MD Max.	1.27mm	1.2mm	1.02mm	0.5mm	3.5mm	0.5mm	0.74mm	0.5mm
FP Max.	28.2mm		36.5mm	32.5mm		34mm	47.5mm	43.6mm
OP	19±0.8mm	19±0.8mm	30.2±0.8mm	30.2±0.4mm	19±0.4mm	31±0.4mm	41.2±0.8mm	41.3±0.8mm

DIMENSIONS

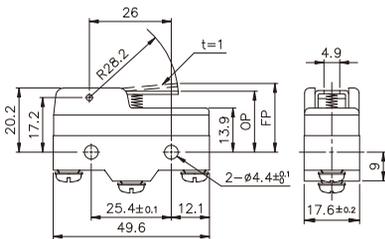
TM-1701-2



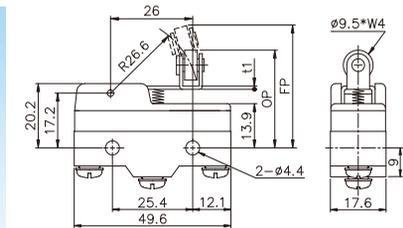
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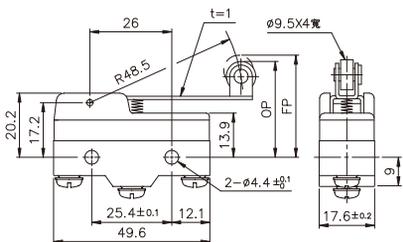
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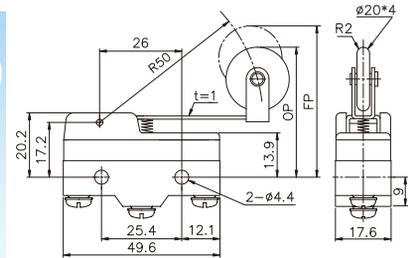
TM-1707-2



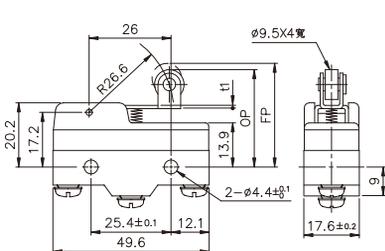
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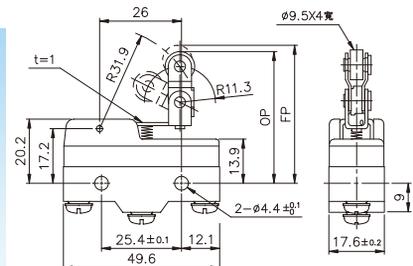
TM-1709-2



TM-1704-2



TM-1743-2



tend MICRO SWITCH (SEALED TYPE)

TM

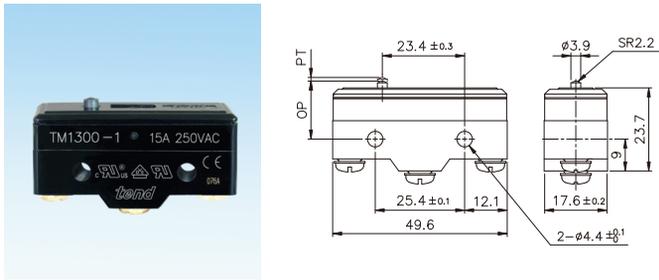
Surrounding joints are sealed by epoxy, and waterproof, oiltight rubber boot.
Dust-preventive, waterproof and oiltight.

OPERATION CHARACTERISTICS

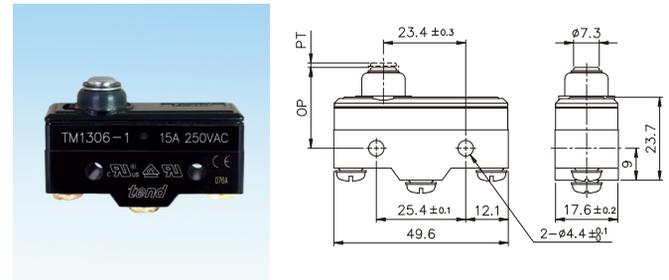
Type	TM-1300-1	TM-1301-1	TM-1303-1	TM-1305-1	TM-1306-1	TM-1307-1	TM-1308-1	TM-1309-1
OF Max.	500g	400g	400g	500g	500g	500g	500g	500g
RF Min.	114g	50g	50g	114g	114g	114g	114g	114g
PT Max.	0.4mm	4mm	4mm	0.4mm	0.4mm	0.4mm	0.4mm	0.4mm
OT Min.	0.13mm	1.6mm	1.6mm	1.6mm	1.6mm	5.5mm	3.58mm	3.58mm
MD Max.	0.05mm	1.3mm	1.3mm	0.05mm	0.05mm	0.05mm	0.05mm	0.05mm
FP Max.		20.6mm	31.8mm					
OP	15.9±0.4mm	17.4±0.8mm	28.6±0.8mm	28.2±0.5mm	21.5±0.5mm	21.8±0.8mm	33.4±1.2mm	33.4±1.2mm

DIMENSIONS

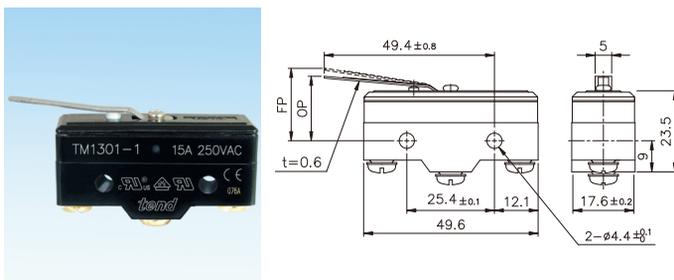
TM-1300-1



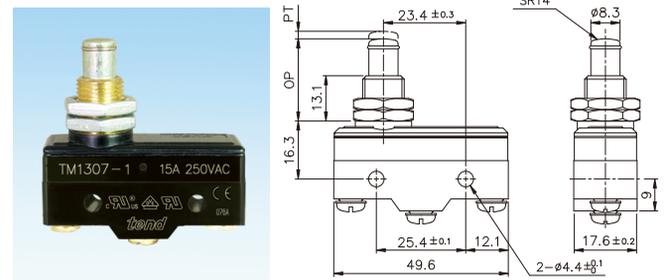
TM-1306-1



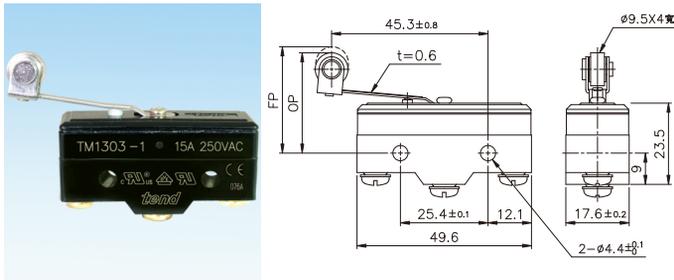
TM-1301-1



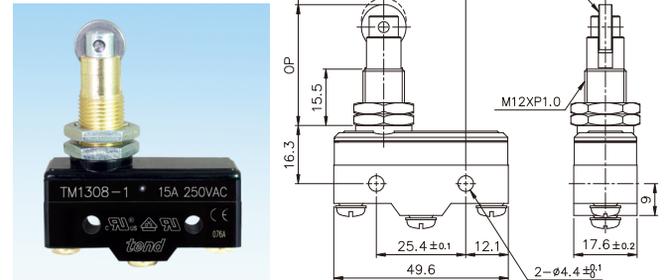
TM-1307-1



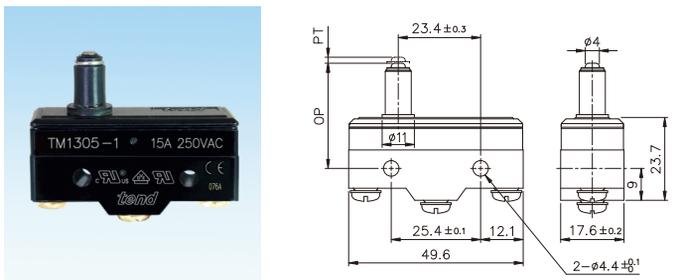
TM-1303-1



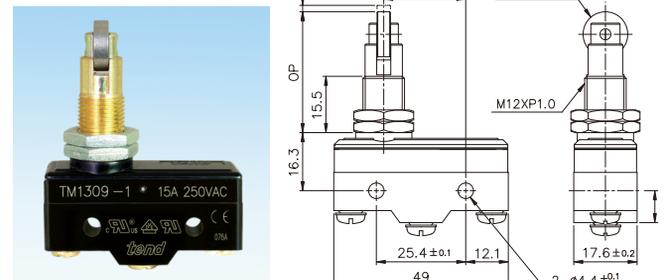
TM-1308-1



TM-1305-1



TM-1309-1

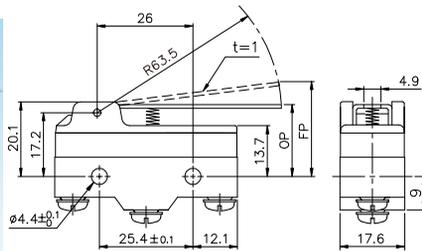


OPERATION CHARACTERISTICS

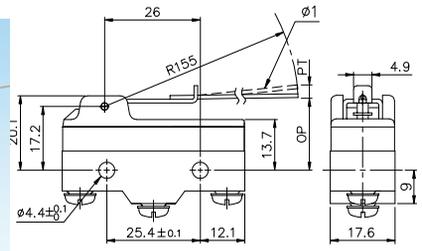
Type	TM-1701-1	TM-1702-1	TM-1703-1	TM-1704-1	TM-1705-1	TM-1707-1	TM-1709-1	TM-1743-1
OF Max.	100g	190g	130g	190g	40g	200g	130g	190g
RF Min.	14g	28g	21g	42g	3g	42g	21g	50g
PT Max.	10mm	5mm	7.1mm	2.7mm	20mm	2.7mm	7.3mm	2.7mm
OT Min.	5.6mm	2mm	4mm	2.4mm	5.6mm	2.4mm	4mm	2.4mm
MD Max.	2mm	1mm	1.6mm	0.8mm	4mm	0.5mm	1.6mm	0.8mm
FP Max.	28.2mm	25mm	36.5mm	32.9mm		33.3mm	47.5mm	43.6mm
OP	19±0.8mm	19±0.8mm	30.2±0.8mm	30.2±0.4mm	19±0.8mm	31±0.4mm	41.2±0.8mm	41.3±0.8mm

DIMENSIONS

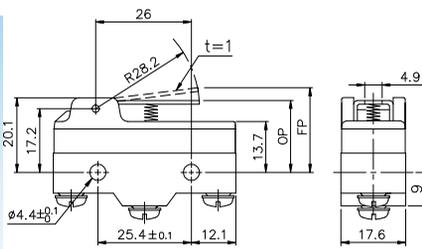
TM-1701-1



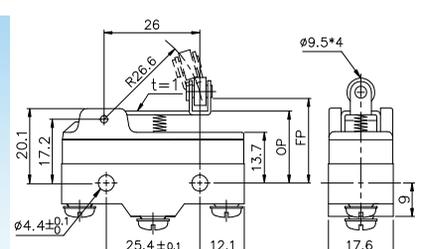
TM-1705-1



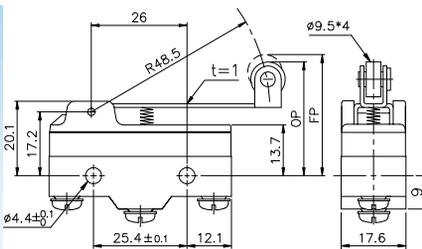
TM-1702-1



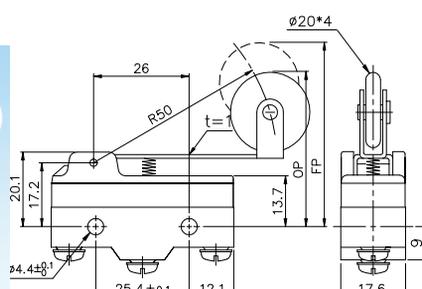
TM-1707-1



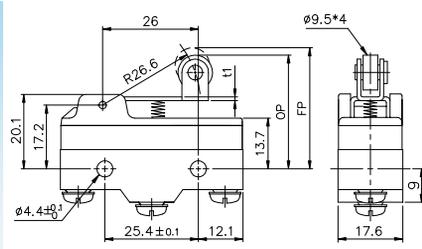
TM-1703-1



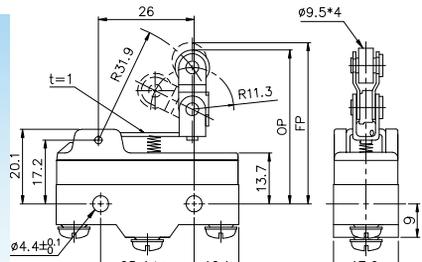
TM-1709-1



TM-1704-1



TM-1743-1



tend MICRO SWITCH FOR DIRECT CURRENT TM

FEATURES

- Similar to TEND TM series micro switch.
- Put a magnet in the contact block to prevent fire.
- The safety switch for DC usage.

SPECIFICATIONS

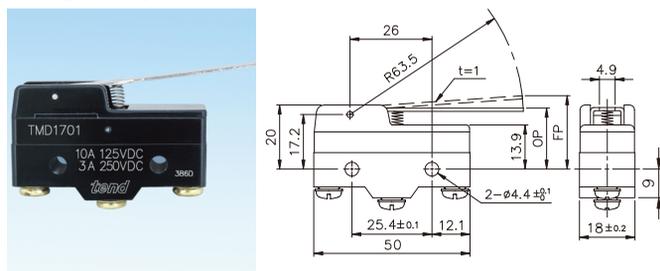
RATINGS

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
8 VDC	15		3	1.5	15	15	5	2.5
14 VDC	15		3	1.5	15	10	5	2.5
30 VDC	15		3	1.5	10	10	5	2.5
125 VDC	10		3	1.5	7.5	6	5	2.5
250 VDC	3		3	1.5	2	1.5	2	1.5

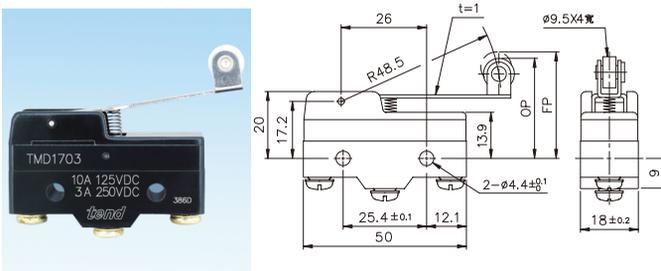
- Notes: 1. Inductive load has a power factor of 0.4min(AC) and a time constant of 7 msec. Max.(DC)
 2. Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.

DIMENSIONS

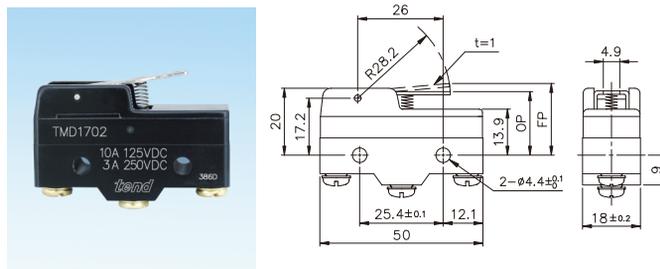
TMD-1701



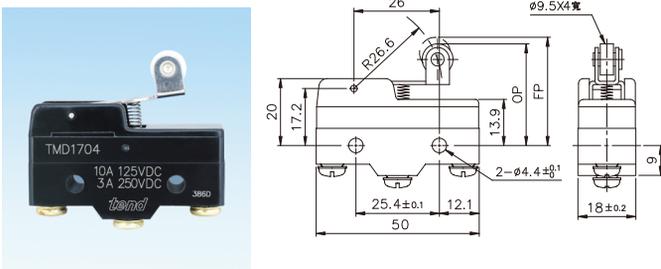
TMD-1703



TMD-1702



TMD-1704



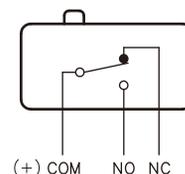
OPERATION CHARACTERISTICS

Type	TMD-1701	TMD-1702	TMD-1703	TMD-1704
OF Max.	110gf(1.08N)	250gf(2.45N)	145gf(1.42N)	220gf(2.16N)
RF Min.	14gf(0.14N)	32gf(0.31N)	21gf(0.21N)	35gf(0.34N)
OT Min.	4.8mm	2.1mm	4mm	2.4mm
MD Max.	3.9mm	1.7mm	3mm	1.7mm
FP Max.	34.6mm	25.5mm	40.5mm	37.1mm
OP	19.8±0.8mm	19.8±0.4mm	32.2±0.8mm	32.2±0.8mm

CHARACTERISTICS

Operating speed	0.1mm to 1m/s
Operating frequency	Mechanically:240 operations/min Electrically:20 operations/min
Contact resistance	15mΩ max.(initial)
Insulation resistance	100MΩ max.(at 500 VDC)
Dielectric strength	1,500 VAC,50/60Hz, for 1 minute
Vibration	10 to 55Hz, 1.5mm double amplitude
Shock	Mechanical :approx. 1,000m/s ² (approx. 100G's) Electrically 300m/s ² (approx. 30G's)
Ambient temperature	-25~+80°C
Ambient Humidity	Below 85% RH
Service life	Mechanically:1,000,000 operations min. Electrically:100,000 operations min.
Weight	Approx. 27 to 36g
IP Rating	Normal Type IP00 Sealed Type: IP62

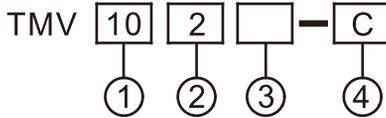
CONTACT CONFIGURATION



FEATURES

- High precision
- Wide variety of actuators
- Wide operating speed range

MODEL DESIGNATION



Designation	Signal	Description
1.Rating	10	10A
	16	16A
	21	21A
2.Actuator	0	Push button type
	1	Long lever type
	2	Short lever type
	3	Long roller type
	4	Short roller type
	5	Extra lever type
3.Rating(contact)	A	1A(com bottom terminal)
	AS	1A(com side terminal)
	B	1B(com bottom terminal)
	BS	1B(com side terminal)
	None	1C(com bottom terminal)
4.Rating(Terminal)	C	#250 Terminal
	D	#187 Terminal

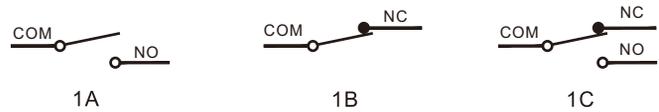
TYPES

Actuator	COM terminal	Rating contact	Rating Terminal	10A	16A	21A	
Push button type	Side Terminal	1C	#187 Terminal	TMV100-C/D	TMV160-C/D	TMV210-C/D	
Long lever type				TMV101-C/D	TMV161-C/D	TMV211-C/D	
Short lever type				TMV101S-C/D	TMV161S-C/D	TMV211S-C/D	
Long roller type				TMV102-C/D	TMV162-C/D	TMV212-C/D	
Short roller type				TMV102S-C/D	TMV162S-C/D	TMV212S-C/D	
Extra lever type				TMV103-C/D	TMV163-C/D	TMV213-C/D	
Crank lever type			Bottom Terminal	#250 Terminal	TMV103S-C/D	TMV163S-C/D	TMV213S-C/D
					TMV104-C/D	TMV164-C/D	TMV214-C/D
					TMV104S-C/D	TMV164S-C/D	TMV214S-C/D
					TMV105-C/D	TMV165-C/D	TMV215-C/D
					TMV105S-C/D	TMV165S-C/D	TMV215S-C/D
					TMV106-C/D	TMV166-C/D	TMV216-C/D
TMV106S-C/D	TMV166S-C/D	TMV216S-C/D					

TYPE AND SHAPE OF TERMINAL

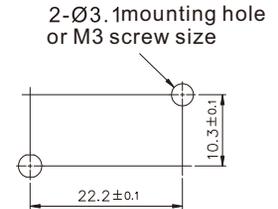
Type of terminal	#187 Terminal	#250 Terminal
Bottom Terminal		
Side Terminal		
Terminal size		

CONTACT CONFIGURATION



MOUNTING HOLES

Using M3 screw washer and spring washer as install. The twist force of 0.39~0.59N.m or 4~6kg.cm is recommended and applicable.



SPECIFICATIONS

RATINGS

Item Type	Rated voltage (V)	Non-inductive load(A)				Inductive load(A)				Inrush current (A)	
		Resistive load		Lamp load		Inductive load		Motor load		NC NO	
		NC	NO	NC	NO	NC	NO	NC	NO		
10A	250 VAC	10		1.5		6		2		24 max.	
	8 VDC	10		3		6		3			
	30 VDC	6		3		6		3			
	125 VDC	0.6		0.1		0.6		0.1			
	250 VDC	0.3		0.05		0.3		0.05			
16A	250 VAC	16		2		10		3		40 max.	
	8 VDC	16		4		10		6			
	30 VDC	10		4		10		4			
	125 VDC	0.6		0.1		0.6		0.1			
	250 VDC	0.3		0.05		0.3		0.05			
21A	250 VAC	21		3		12		4		50 max.	
	8 VDC	21		5		12		7			
	30 VDC	14		5		12		5			
	125 VDC	0.6		0.1		0.6		0.1			
	250 VDC	0.3		0.05		0.3		0.05			

CHARACTERISTICS

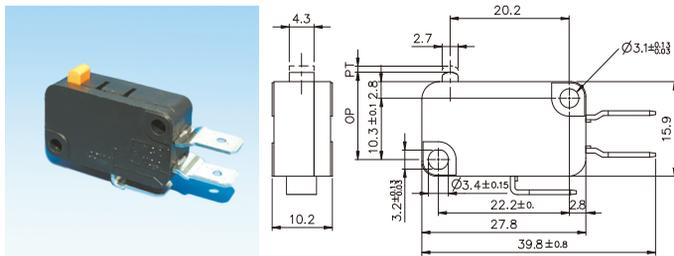
Item	Type	TMV 10	TMV 16	TMV 21
Operating speed		0.1mm to 1m/s (push button type)		
Operating frequency		Mechanically:240 operations/min Electrically:20 operations/min		
Insulation resistance		100MΩ max.(at 500 VDC)		
Contact resistance		15mΩ max.(initial)		
Dielectric strength	non-continuous terminals	1,000 VAC,50/60Hz, for 1 minute		
	between non-continuous terminals	TMV10:1,500 VAC,50/60Hz, for 1 minute TMV16/TMV21:2,000 VAC,50/60Hz, for 1 minute		
Vibration	Malfunction	10 to 55Hz, 1.5mm double amplitude		
Shock	Mechanical durability	1,000m/sec ² (approx. 100G's)		
	Malfunction	200m/sec ² (approx. 20G's)	300m/sec ² (approx. 30G's)	
Service life	Mechanically	20,000,000 operations min		
	Electrically	300,000 operations min	100,000 operations min	
Ambient temperature		General purpose type:-25 to +65°C		
Ambient humidity		General purpose type:85%RH max		
Weight		Approx:7.2~8g		
IP Rating		Normal Type IP00 Sealed Type: IP62		

OPERATION CHARACTERISTICS

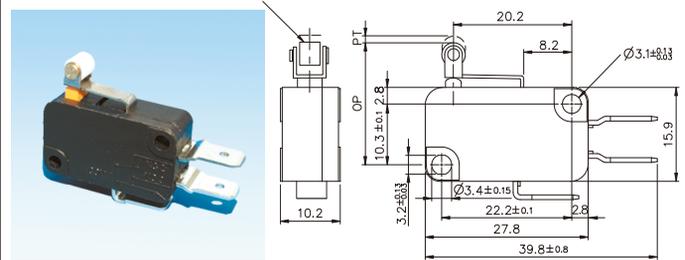
Type	TMV100 TMV160 TMV210	TMV101 TMV161 TMV211	TMV102 TMV162 TMV212	TMV103 TMV163 TMV213	TMV104 TMV164 TMV214	TMV105 TMV165 TMV215	TMV106 TMV166 TMV216
OF Max.	200g	125g	200g	125g	240g	70g	125g
RF Min.	50g	14g	50g	14g	50g	6g	14g
PT Max.	1.4mm	4.0mm	1.6mm	4.0mm	1.6mm	9.0mm	4.0mm
OT Min.	0.8mm	1.6mm	0.8mm	1.6mm	0.8mm	3.2mm	1.6mm
MDMax.	0.5mm	1.5mm	0.6mm	1.5mm	0.6mm	2.8mm	1.5mm
OP	14.7 ±0.5mm	15.2 ±1.2mm	15.2 ±0.5mm	20.7 ±1.2mm	20.7 ±0.6mm	15.2 ±2.5mm	18.7 ±1.2mm

DIMENSIONS

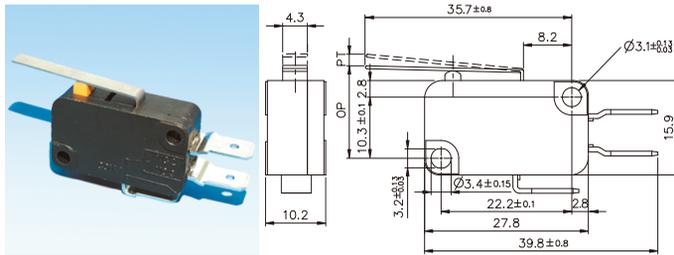
TMV100-C



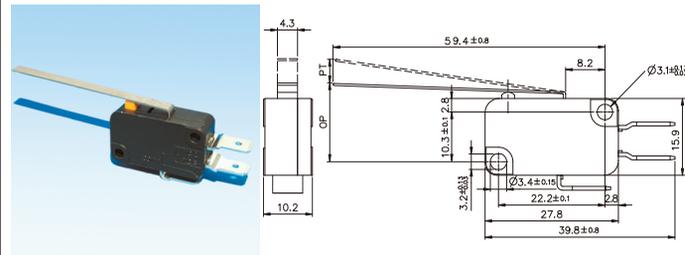
TMV104-C



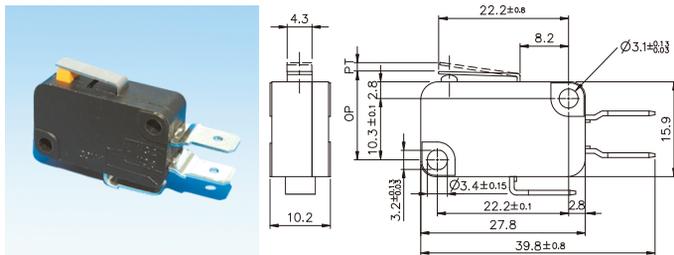
TMV101-C



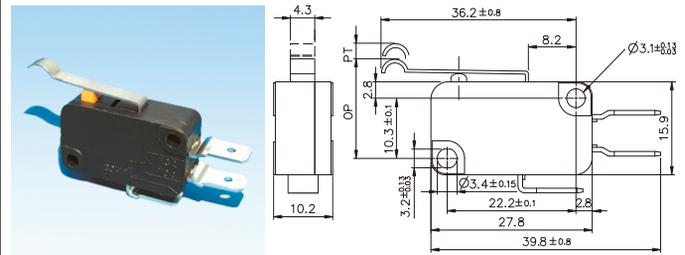
TMV105-C



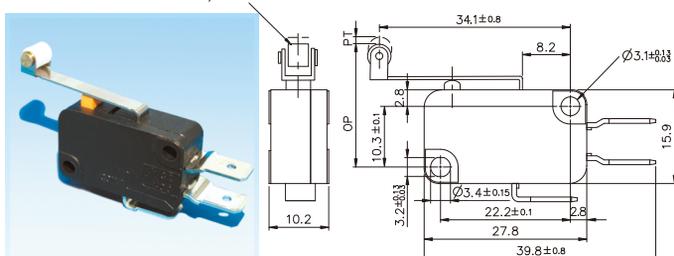
TMV102-C



TMV106-C



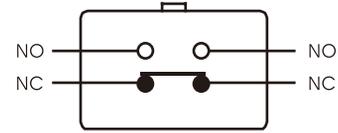
TMV103-C



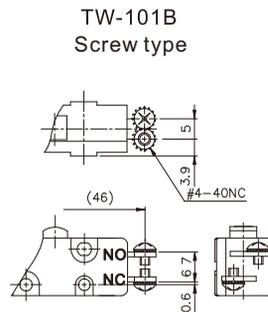
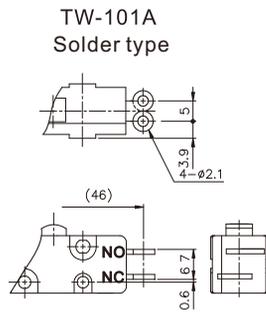
RATINGS

Rated voltage (V)	Non-inductive load(A)				Inductive load(A)				Inrush current (A)	
	Resistive load		Lamp load		Inductive load		Motor load			
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	10		3	1.5			4	2	30 Max.	15 Max.
250 VAC	10		2	1	10		3	1.5		
8 VDC	10		6	3	10		6	6		
14 VDC	10		6	3	10		6	6		
30 VDC	6		4	3	6.0		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		

CONTACT CONFIGURATION



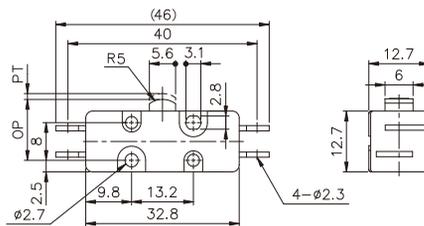
TYPE OF TERMINAL



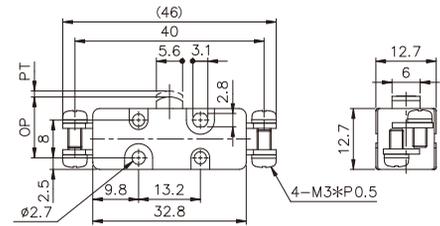
OPERATION CHARACTERISTIC

Type	TW-101 $\frac{A}{B}$	TW-1012 $\frac{A}{B}$	TW-1014 $\frac{A}{B}$
OF Max.	400g	200g	240g
RF Min.	114g	60g	70g
PT Max.	1.6mm	3.5mm	3mm
OT Min.	0.25mm	1.8mm	1.2mm
MD Max.	0.65mm	1.6mm	2mm
OP	11.7 ±0.4mm	14.6 ±0.8mm	25.3 ±0.8mm

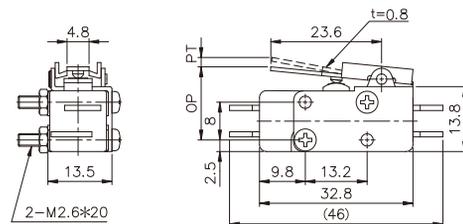
TW-101A



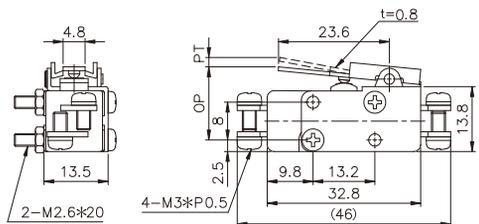
TW-101B



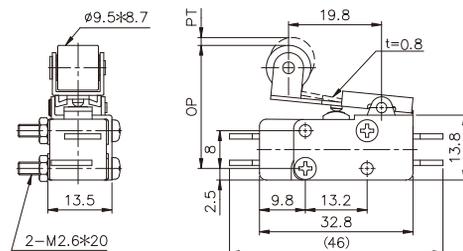
TW-1012A



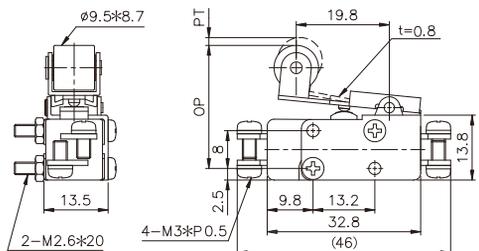
TW-1012B



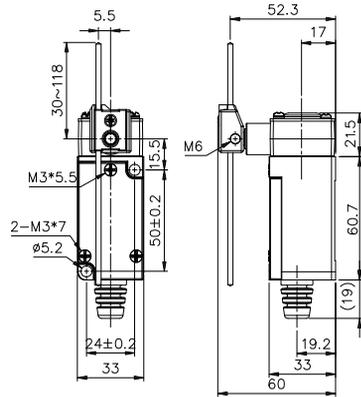
TW-1014A



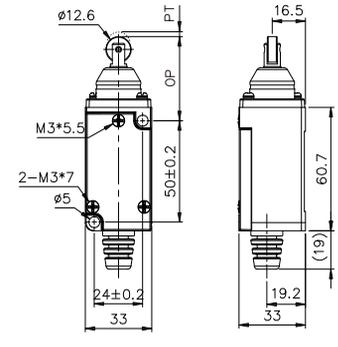
TW-1014B



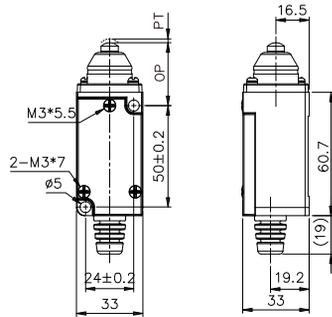
TZ-1107



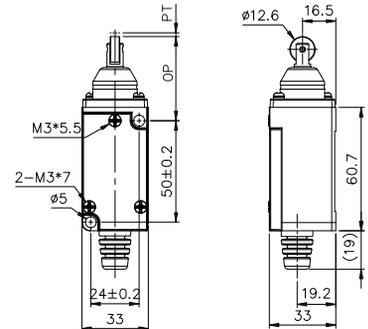
TZ-1112



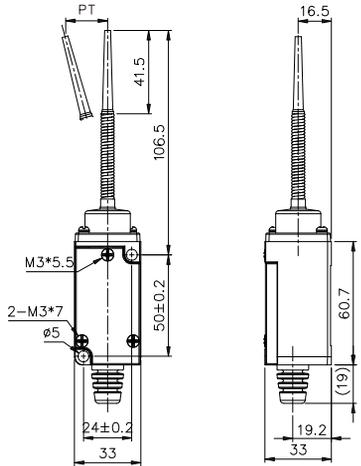
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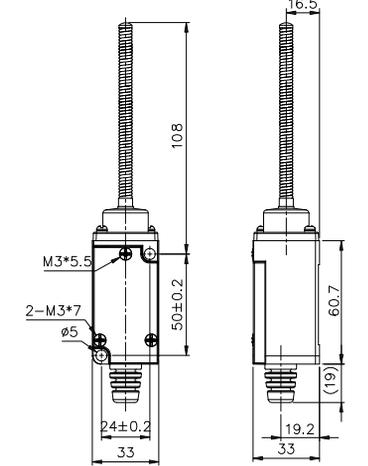
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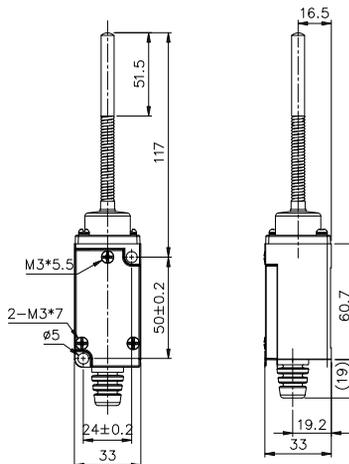
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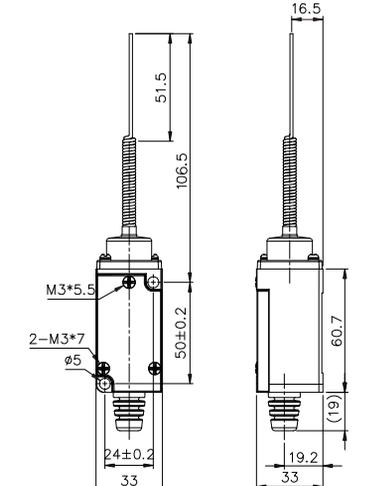
TZ-1167



TZ-1168



TZ-1169



SPECIFICATIONS

RATINGS

Rated Voltage (V)	Non-inductive load(A)				Inductive load (A)				Inrush Current (A)	
	Resistive Load		Lamp Load		Inductive load		Motor Load			
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	5		1.5		3		2	1	10 max.	10 max.
250 VAC	5		1.5		3		1	0.5		
8 VDC	5		—		1.5		—			
14 VDC	5		—		1.5		—			
30 VDC	5		—		1.5		—			
125 VDC	0.5		—		0.05		—			
250 VDC	0.25		—		0.03		—			

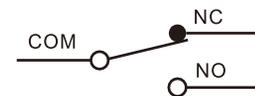
OPERATING CHARACTERISTICS

Type	TZ-2311	TZ-2312
OF max.	1200g	1200g
RF min.	500g	500g
PT max.	1.5mm	1.5mm
OT min.	3mm	3mm
MD max.	0.3mm	0.3mm
OP	31.4±0.8	31.4±0.8

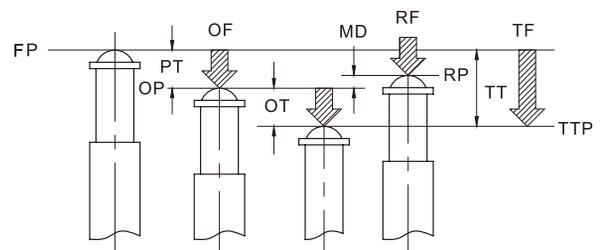
CHARACTERISTICS

Operating Speed	0.01mm to 1m/sec(Plunger Type)
Operating Frequency	Mechanically: 240 operations/min Electrically: 20 operations/min
Contact Resistance	15mΩ max. (initial)
Insulation Resistance	100MΩ min. (at 500VDC)
Dielectric Strength	1,000 VAC, 50/60Hz, for 1 minute between non-continuous terminals; 1,500 VAC, 50/60 Hz, for 1 minute between current-carrying metal part and ground.
Vibration	(*10~20HZ): 1.5mm double amplitude Malfunction durability: 10~55Hz
Shock	Mechanically durability: 1,000m/Sec ² (approx. 100G'S) Malfunction durability: 300m/Sec ² (approx. 30G'S)
Ambient Temperature	-10°C ~ +80°C (Not freezing)
Humidity	Max. 95%RH
Service Life	Mechanically: 10,000,000 operations min. Electrically: 500,000 operations min.
Weight	About 80 g
Degree of Protection	Sealed: (IEC) IP67

CONTACT CONFIGURATION



DEFINITIONS OF OPERATING CHARACTERISTICS



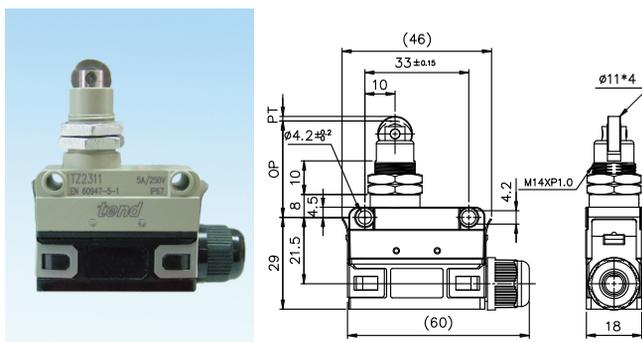
Operate

Release

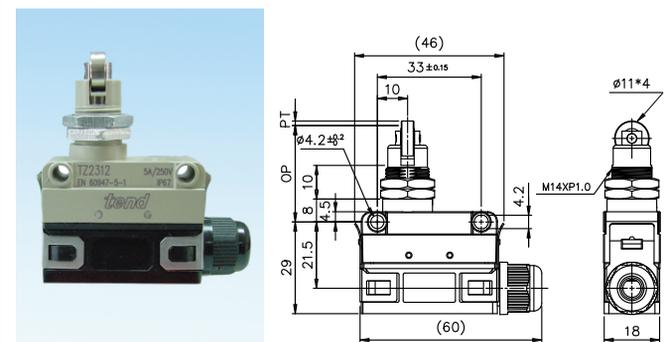
- OF: Operating Force
- RF: Releasing Force
- TF: Total Force
- FP: Free Position
- OP: Operating Position
- RP: Releasing Position
- TTP: Total Travel Position
- PT: Pre Travel
- OT: Over Travel
- MD: Movement Differential
- TT: Total Travel

APPEARANCE and DIMENSIONS

TZ-2311



TZ-2312



Wide Selection of Two-circuit Double-break Limit Switches

FEATURES

- Rigid diecast switch housing
- Set position indicator plate for easy maintenance
- High mechanical strength
- Oiltight, waterproof and bust-proof construction

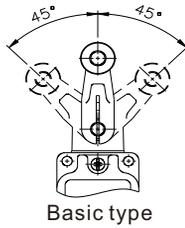
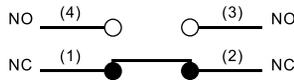
SPECIFICATIONS

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
125VAC	10	10	3	1.5	10	5	2	
250VAC	5	5	2	1	5	3	1.0	
480VAC	3	3	1.5	0.8	3	1.5	0.8	
600VAC	1	1	1	0.5	1.5	1	0.5	
8 VDC	10		6		10		6	
14 VDC	10		6		10		6	
30 VDC	6		4		6		4	
125 VDC	0.8		0.2		0.8		0.2	
250 VDC	0.4		0.1		0.4		0.1	

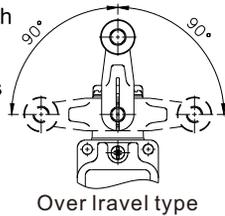
Notes: 1. Inductive load: power factor=0.4; time constant=7msec.
 2. Lamp load has an inrush current of 10 times the steady-state current while motor load has an inrush current of 6 times the steady-state current.

CONTACT CONFIGURATION



OVERTRAVEL TYPE

The Overtravel Type is a limit switch which is provided with a greater OT to facilitate dog setting. Since this type is identical to the Basic Type in dimensions, both types are interchangeable. The Overtravel Type is classified into two versions -2 series and -2N series.



-2 SERIES

The head of -2 series switch can be installed in any of the four directions.
 90° operation on only one side - impossible
 90° operation on either side - possible

-2N SERIES

The head of -2N series switch can be installed only in two directions, forward and backward.
 90° operation on only one side - possible
 90° operation on either side - possible



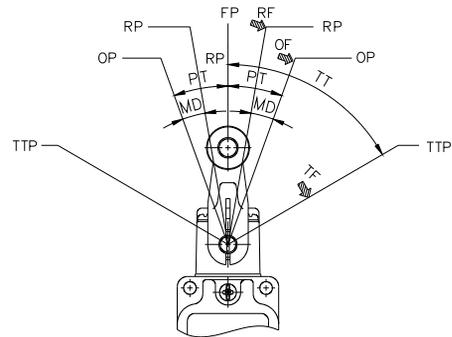
Loosen the cam holder with a coin or screw driver

Reverse the cam

Reverse the position of the cam and reinstall

CHARACTERISTICS

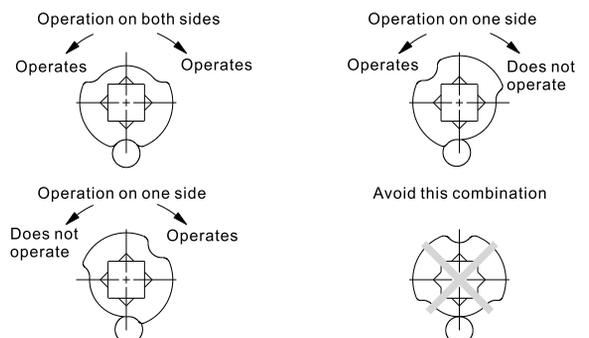
Operating speed	1mm to 2m/sec ² (TZ5104)
Operating frequency	Mechanically: 120 operations/min Electrically: 30 operations/min
Contact resistance	15mΩ max.(initial)
Insulation resistance	100MΩ max. (at 500 VDC)
Dielectric strength	1,000 VAC, 50/60Hz, for 1 minute between non-continuous terminals; 2,200 VAC, 50/60Hz, for 1 minute between each terminal and non-current-carrying metal part and between each terminal and ground
Vibration	Malfunction durability: 10 to 55HZ, 1.5mm double amplitude
Shock	Mechanical durability: approx. 1,000m/sec ² (approx. 100G's) Malfunction durability: approx 300m/sec ² (approx. 30G's)
Ambient temperature	Operating: -10~+80°C
Humidity	95%RH max.
Service life	Mechanically: 15,000,000 operations min. Electrically: 500,000 operations min.
Weight	Approx-275g (with Type TZ-5104)
Degree of protection	IEC : IP67
Temperature rise	50 degrees max.



- OF: Operating Force
- RF: Releasing Force
- TF: Total Force
- FP: Free Position
- OP: Operating Position
- RP: Releasing Position
- TTP: Total Travel Position
- PT: Pretravel
- OT: Overtravel
- MD: Movement Differential
- TT: Total travel

90° operation on one side is possible by simply changing the direction of the cam.

Relationship of cam to operation as observed from the rear of switch

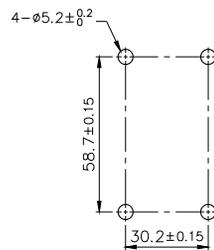


OPERATING CHARACTERISTICS

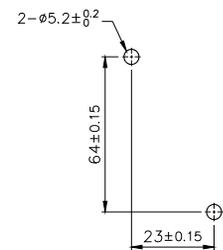
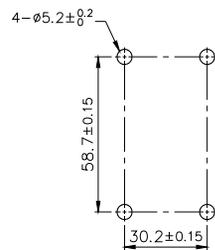
Type	TZ-5101	TZ-5102 TZ-5103	TZ-5109	TZ-5104	TZ-5108	TZ-5107	TZ-5105
OF max.	2,720g	2,720g	2,720g	1,360g	1,360g	142g	1,200g
RF min.	910g	910g	910g	227g	227g	28g	-
PT max.	1.7mm	1.7mm	1.7mm	20°	20°	20°	55°
OT min.	6.4mm	5.6mm	4mm	30°	30°	30°	35°
MD max.	1mm	1mm	1mm	12°	12°	12°	-
OP	34±0.8mm	44.8±0.8mm	44.5±0.8mm	-	-	-	90±10°
TTP max.	29.5mm	39.5mm	41mm	-	-	-	-

Type	TZ-5106.5166.5168.5169	TZ-5104-2.5108-2	TZ-5107-2	TZ-5104-2N.5108-2N	TZ-5107-2N
OF max.	150g	1000g	290g	980g	290g
RF min.	-	100g	25g	120g	25g
PT max.	28mm	20°	20°	20°	20°
OT min.	-	55°	55°	70°	70°
MD max.	-	12°	12°	10°	10°

Mounting holes Basic type and-2 SERIES

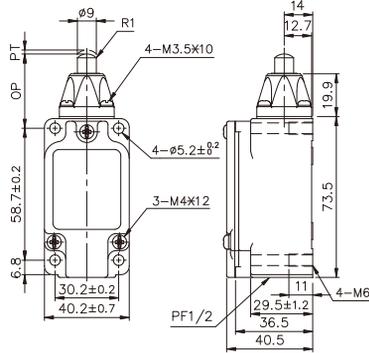


-2N SERIES

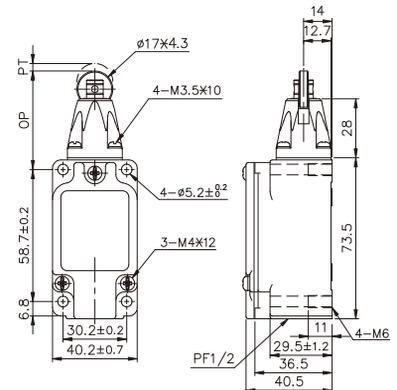


DIMENSIONS

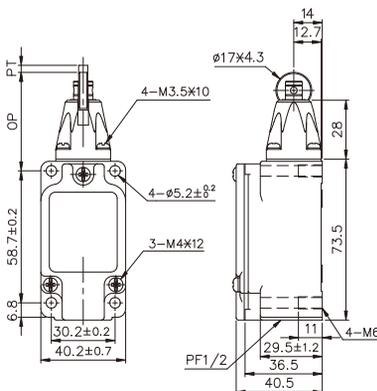
TZ-5101



TZ-5102

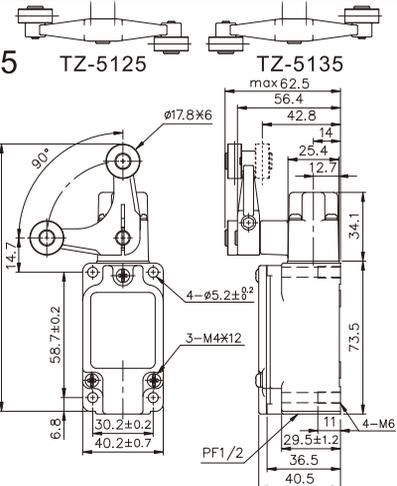


TZ-5103

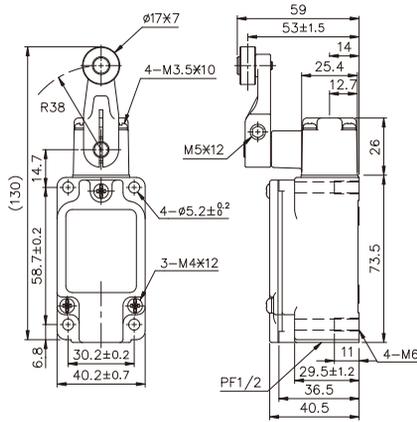


TZ-5105

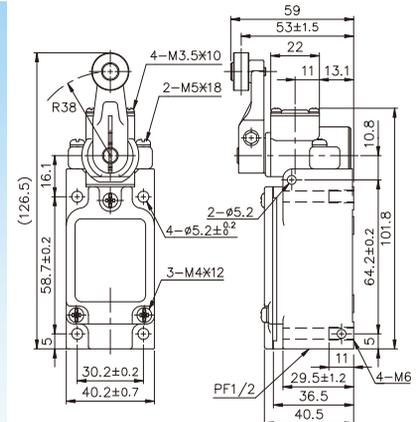
TZ-5125 TZ-5135



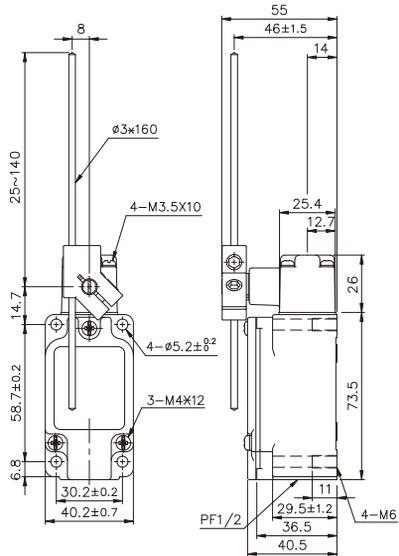
TZ-5104
TZ-5104-2



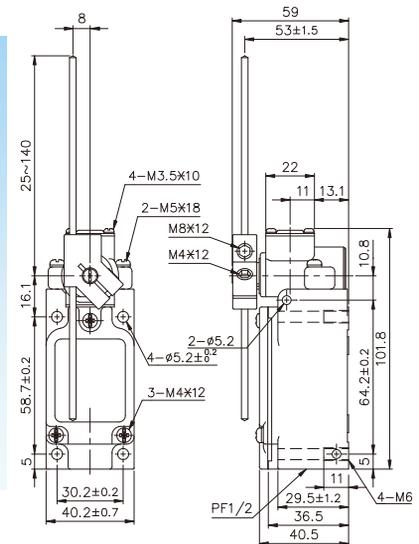
TZ-5104-2N



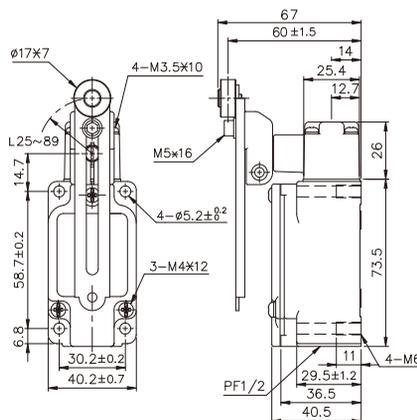
TZ-5107
TZ-5107-2



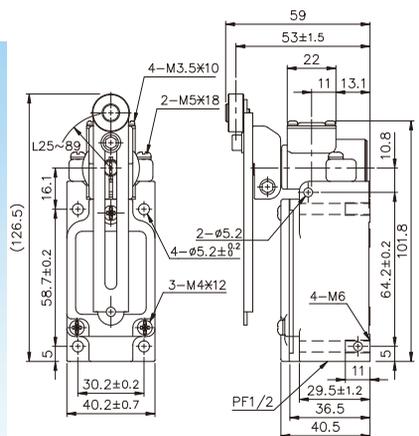
TZ-5107-2N



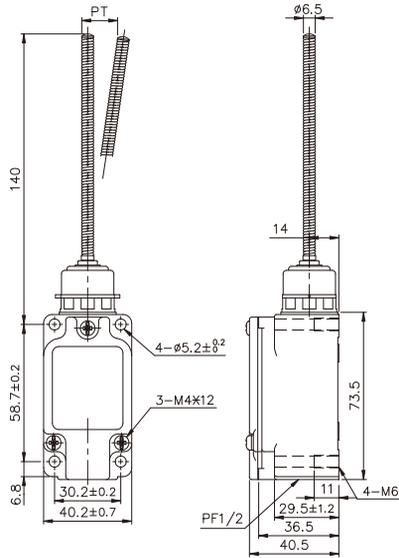
TZ-5108
TZ-5108-2



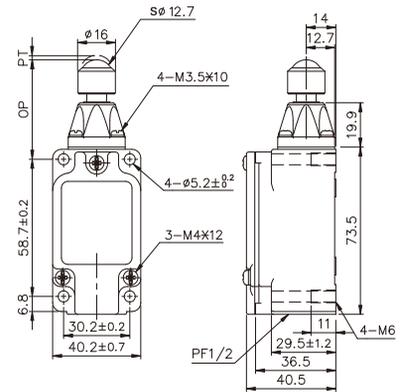
TZ-5108-2N



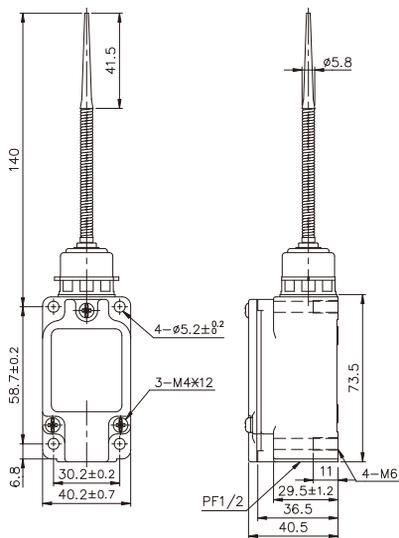
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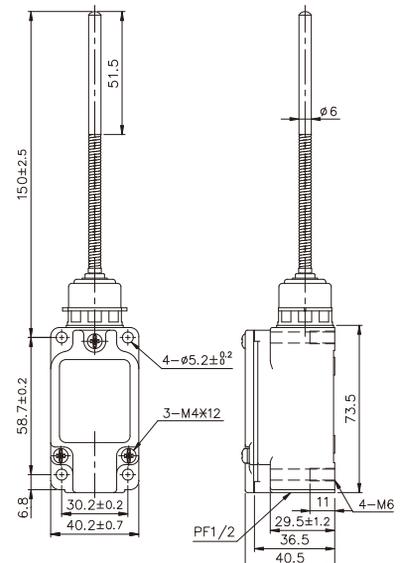
TZ-5109



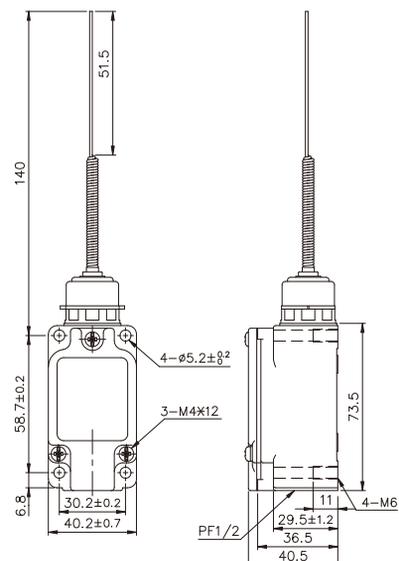
TZ-5166



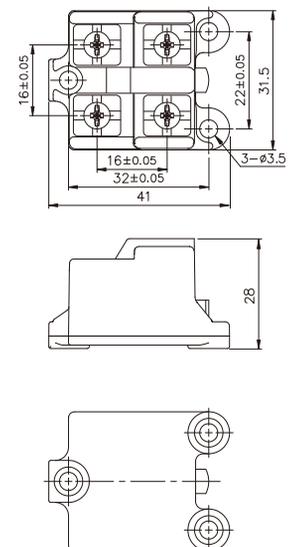
TZ-5168



TZ-5169



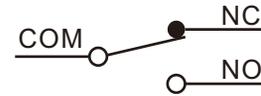
TZ-501



FEATURES

- The interior of the TM Micro switch and its strong aluminium alloy housing are water proof and oil proof.
- The ratings and features are the same as TM micro switch.
- Wide variety of actuators, easy to use.
- Each comes with a set of cable hardware.
(Includes rubber gasket, washer and plastic nut)
- Protection Rating: IEC standard IP65

SPECIFICATIONS

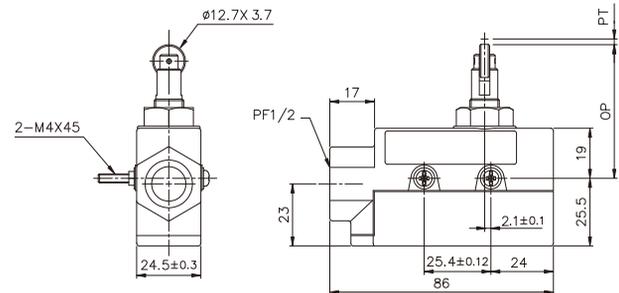


OPERATING CHARACTERISTICS

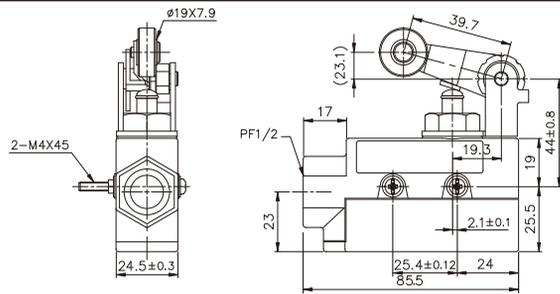
Type	TZ-6001	TZ-6002	TZ-6003	TZ-6004	TZ-6043	TZ-6101	TZ-6102	TZ-6103	TZ-6104	TZ-6143
OF max.	350g	350g		570g	570g	800g	500g		640g	640g
RF min.	114g	114g		170g	170g	240g	100g		230g	230g
PT max.	0.4mm	0.5mm	4mm	4mm	2mm	1mm	5mm		5mm	5mm
OT min.	5.5mm	3.6mm	6mm	6mm	5mm	3.5mm	6mm		6mm	6mm
MDmax.	0.05mm	0.05mm	0.4mm	0.4mm	0.1mm	0.12mm	0.4mm		0.4mm	0.4mm
OP	38.2±0.8mm	49.7±1mm				45.8±0.8mm	49.7±0.8mm			—

DIMENSIONS

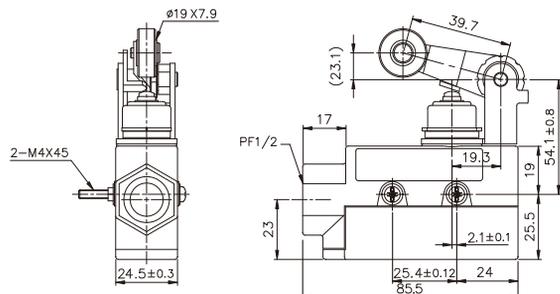
TZ-6003



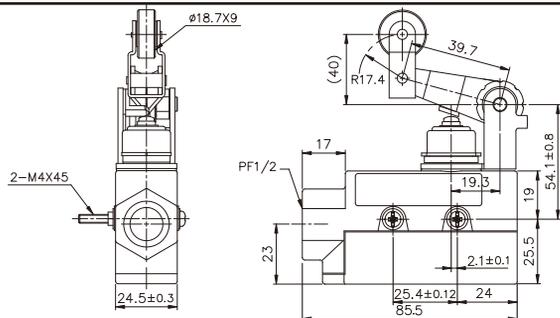
TZ-6004



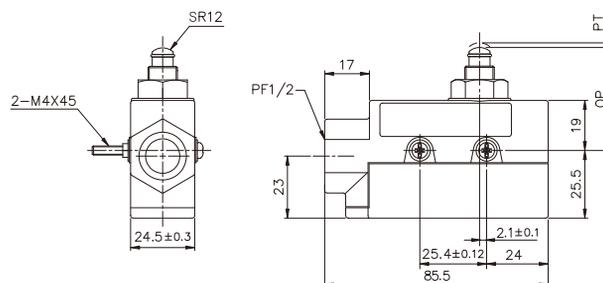
TZ-6104



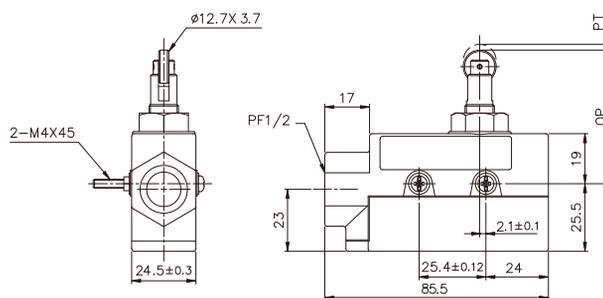
TZ-6143



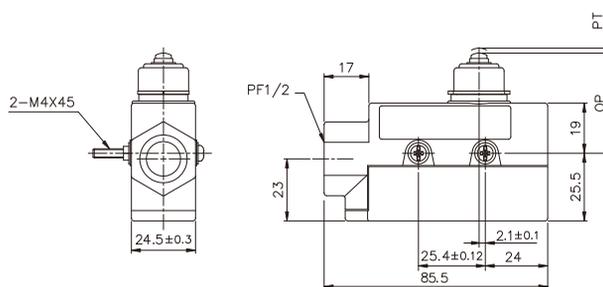
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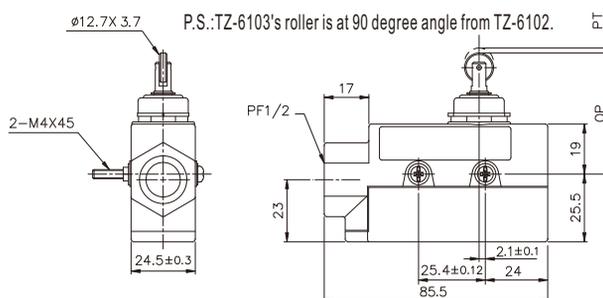
TZ-6002



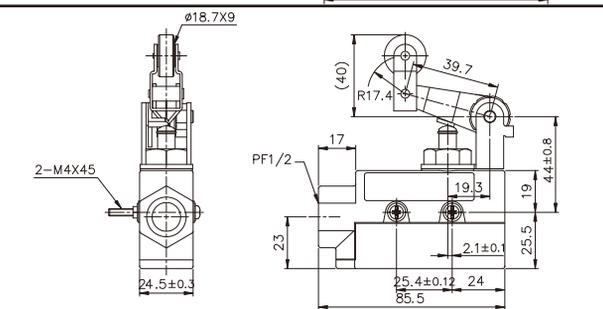
TZ-6101



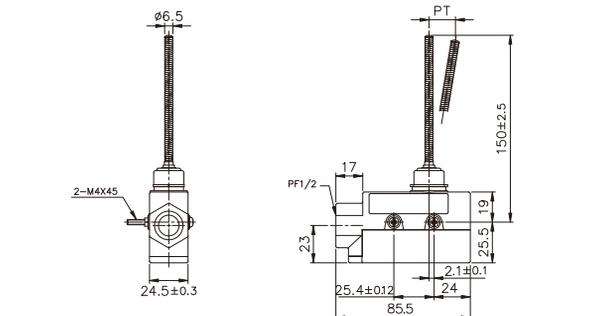
TZ-6102
(TZ-6103)



TZ-6043



TZ-6106



SPECIFICATIONS

- High precision and long life (10,000,000 mechanical operations)
- Sealed with gasket diaphragm to provide high sealing property without use of any adhesive or pin
- Adjustable positions for versatility

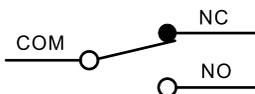
SPECIFICATIONS

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
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
8 VDC	10		3	1.5	6		6	5
14 VDC	10		3	1.5	6		6	5
30 VDC	8		3	1.5	6		5	2.5
125 VDC	0.5			0.4	0.05			0.05
250 VDC	0.25			0.2	0.03			0.03

- Notes: 1. inductive load: power factor=0.4; time constant =7msec.
 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.

CONTACT CONFIGURATION



CHARACTERISTICS

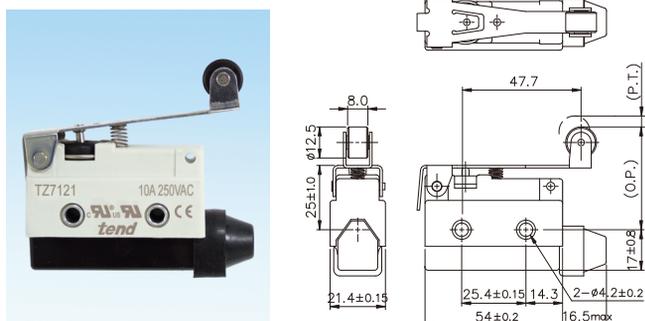
Operating speed	0.01mm to 50cm/sec (at pin plunger)
Operating frequency	120 operations/min
Contact resistance	15mΩ max. (initial)
Insulation resistance	100MΩ max. (at 500 VDC)
Dielectric strength	1,000VAC, 50/60Hz, for 1 minute between non-continuous terminals 1,500VAC, 50/60Hz, for 1 minute between current-carrying and non-current-carrying parts and between each terminal and ground
Vibration	Malfunction: 10 to 55HZ, 1.5mm double amplitude
Shock	Mechanical durability: 1,000m/S ² (approx. 100G's) Malfunction: 300m/S ² (approx. 30G's)
Ambient temperature	Operating: -10 to +80°C
Humidity	95% HR max. (at +20 to +35°C)
Service life	Mechanically: 10,000,000 operations min. (At rated OT value) Electrically: 500,000 operations min
weight	Approx. 60g
Degree of protection	IEC: IP65

OPERATION CHARACTERISTICS

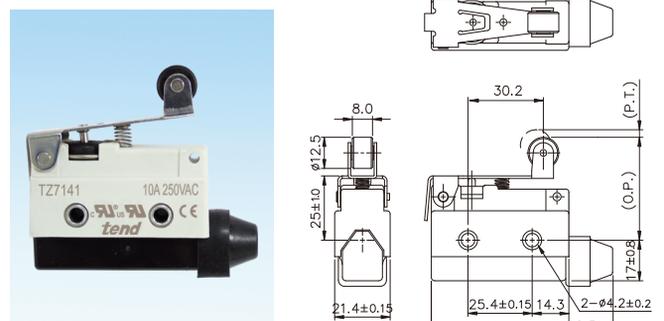
Type	TZ-7100	TZ-7110	TZ-7310	TZ-7311	TZ-7312	TZ-7120	TZ-7140	TZ-7121	TZ-7141	TZ-7124	TZ-7144	TZ-7166
OF Max.	600g	600g	600g	600g	600g	150g	220g	180g	240g	200g	280g	120g
RF Min.	100g	100g	100g	100g	100g	40g	60g	50g	80g	60g	100g	
PT Max.	2.0mm	2.0mm	2.0mm	2.0mm	2.0mm	13.5mm	8.5mm	11.0mm	6.5mm	11mm	6.5mm	25mm
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
MD Max.	0.8mm	0.8mm	0.8mm	0.8mm	0.8mm	3.2mm	2.0mm	2.4mm	1.5mm	2.4mm	1.5mm	
OP	30.8±0.8mm	44±1.2mm	21.8±1.2mm	33.3±1.2mm		25±1mm	25±1mm	40±1mm	40±1mm	50±1.2mm	50±1.2mm	
FP						35mm	35mm		46mm		56mm	

DIMENSIONS

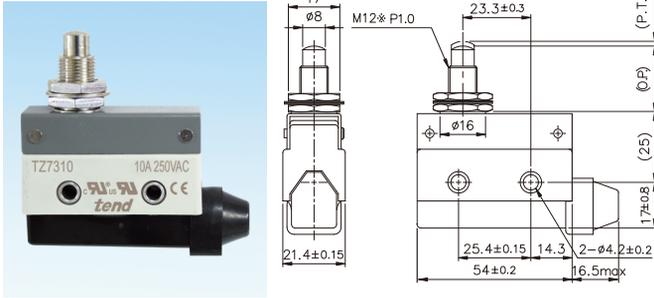
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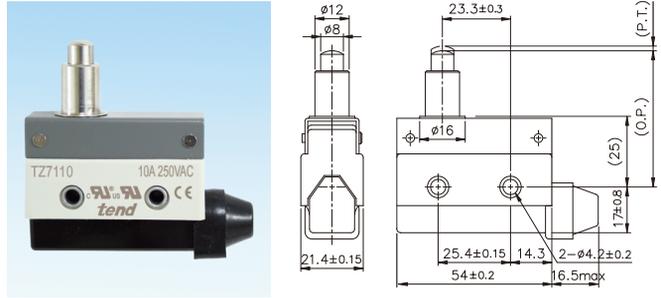
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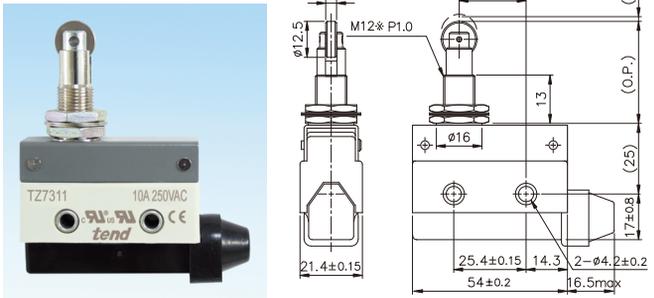
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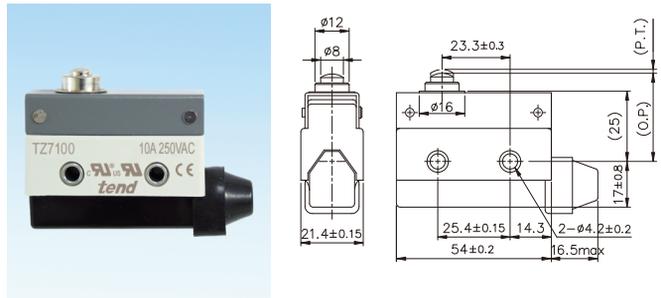
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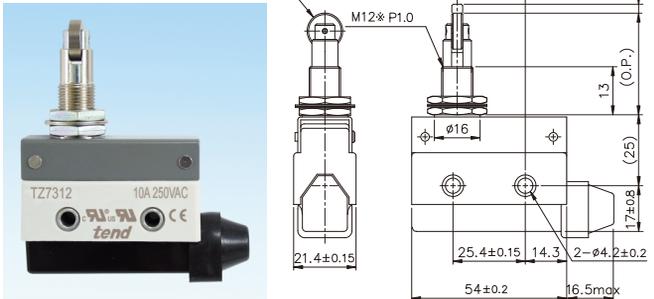
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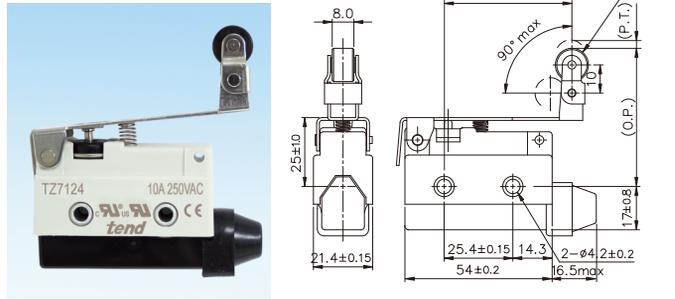
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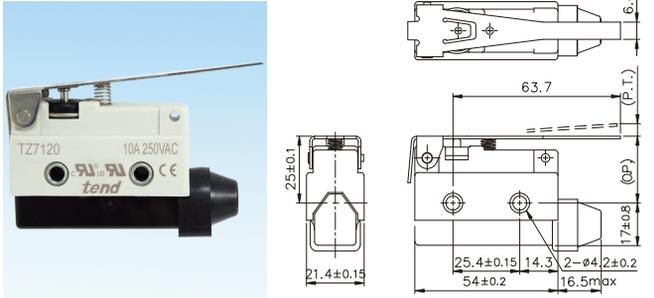
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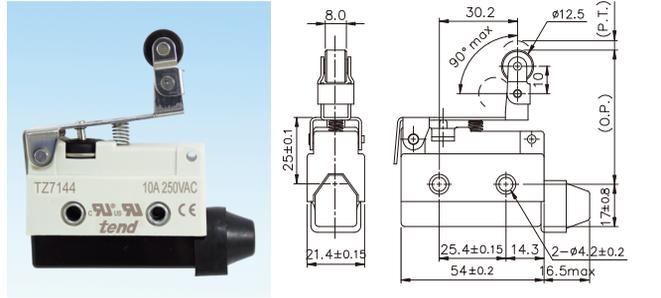
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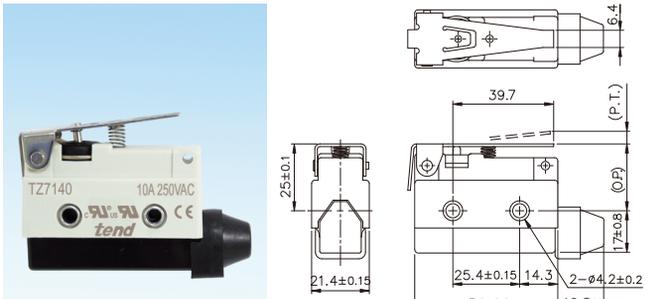
TZ-7120



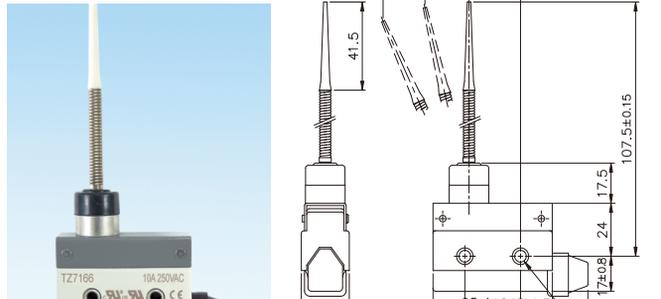
TZ-7144



TZ-7140



TZ-7166



FEATURES

- Built-in basic switch with double spring mechanism
- Long life (10,000,000)mechanical operations)
- Highly rigid construction (head and cover snugly fit in box)
- Dustproof and drip-proof construction
- Smooth operation with greater OT
- Easy-to-wire conduit opening design
- Versatile, Easy to use

SPECIFICATIONS

RATINGS

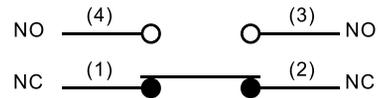
Rated Voltage	Non-inductive				Inductive load			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8 VDC	5	5	3	3	5	4	3	3
14 VDC	5	5	3	3	4	4	3	3
30 VDC	5	5	3	3	4	4	3	3
125 VDC	0.4	0.4						
250 VDC	0.2	0.2						
Inrush current	N.C.:24A max.N.O.:12Amax							

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.

OPERATION CHARACTERISTICS

Type	TZ-8104	TZ-8108	TZ-8107	TZ-8111	TZ-8112 TZ-8122	TZ-8166 TZ-8167 TZ-8168 TZ-8169
OF Max.	750g	750g	750g	900g	900g	150g
RF Min.	100g	100g	100g	150g	150g	—
PT Max.	20°	20°	20°	1.5mm	1.5mm	30mm
OT Min.	50°	50°	50°	4mm	4mm	—
MD Max.	12°	12°	12°	1mm	1mm	—
OP	—	—	—	26±0.8mm	37±0.8mm	—

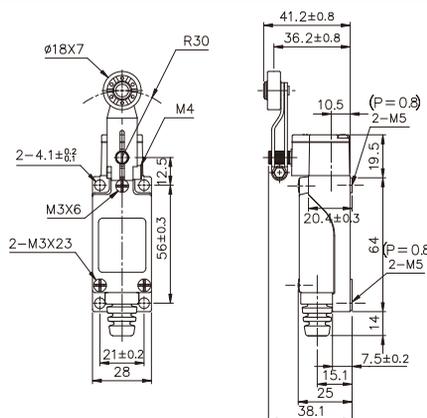
CONTACT CONFIGURATION



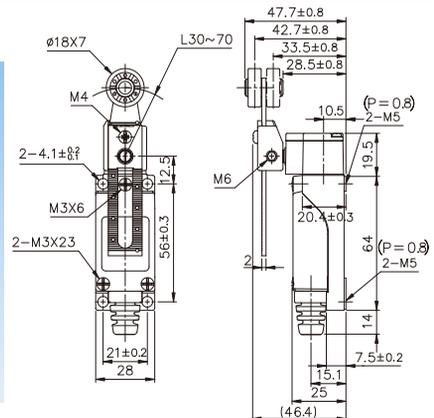
CHARACTERISTICS

Operating speed	0.5mm to 50cm/s
Operating frequency	Mechanically:120 operations/min Electrically:30 operations/min
Contact resistance	25mΩ max. (initial)
Insulation resistance	100MΩ max. (at 500 VDC)
Dielectric strength	1,000VAC,50/60Hz, fo 1minute between non-continuous terminals 1,500VAC,50/60Hz, for 1 1minute between current-carrying and non-current-carrying pasts and between each terminal and ground
Vibration	Mechanical durability: 10 to 55HZ,1.5mm double amplitude
Shock	Mechanical durability: 1,000m/S ² (approx.100G's) Malfunction: 500m/S ² (approx.50G's)
Ambient temperature	Operating:-5 to +65°C
Humidity	95%RH max.
Service life	Mechanically: 10,000,000 operations min. Electrically:500,000 operations min.
weight	Approx.130 to 190g
Degree of protection	IEC : IP65

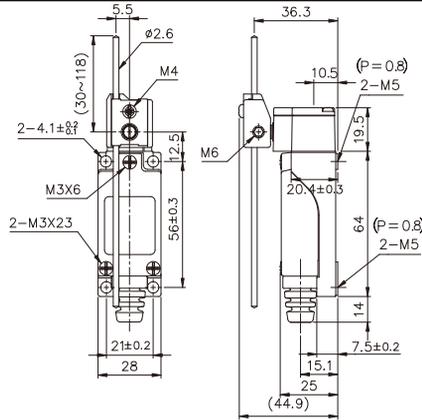
TZ-8104



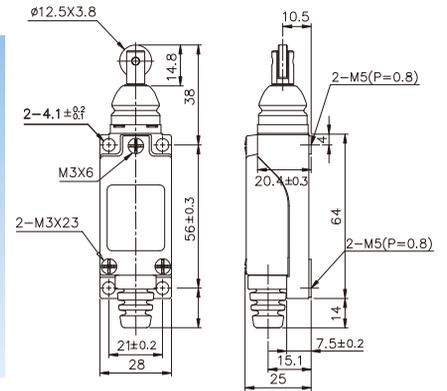
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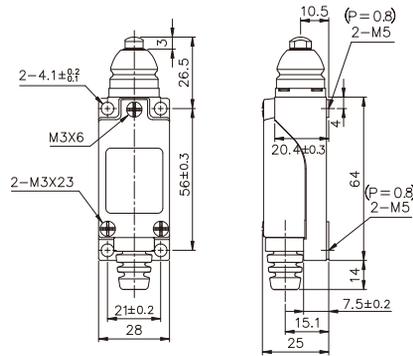
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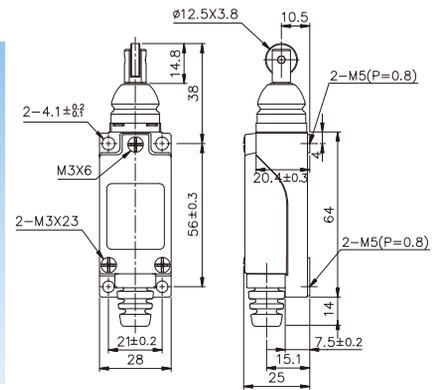
TZ-8112



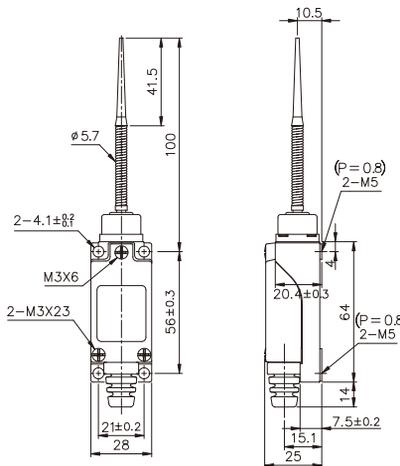
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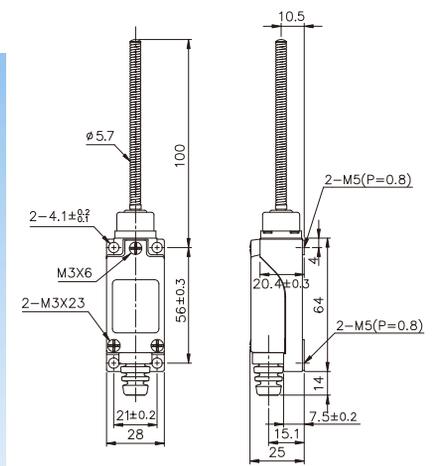
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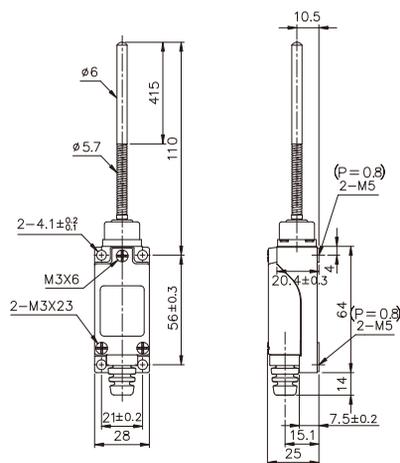
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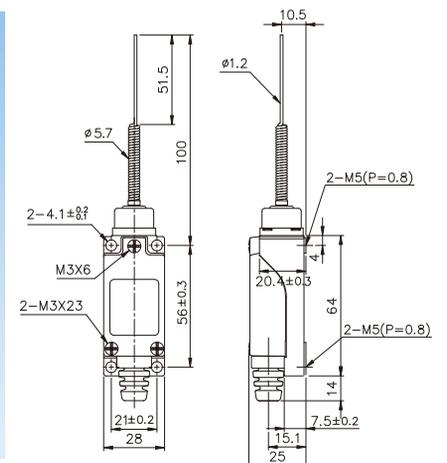
TZ-8167



TZ-8168



TZ-8169



■ SPECIFICATIONS

- Built-in basic switch with double spring mechanism
- Long life (10,000,000 mechanical operations)
- Material: glass reinforced plastic.
- Dust proof and drip-proof construction
- Smooth operation with greater OT
- Easy-to-wire conduit opening design

■ SPECIFICATIONS

● 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
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8 VDC	5	5	3	3	5	4	3	3
14 VDC	5	5	3	3	4	4	3	3
30 VDC	5	5	3	3	4	4	3	3
125 VDC	0.4	0.4						
250 VDC	0.2	0.2						
Inrush current	N.C.:24A max.N.O.:12Amax							

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 an inrush current of 6 times the steady-state current.

■ OPERATION CHARACTERISTICS

Type	TZ-9104	TZ-9108	TZ-9107	TZ-9111	TZ-9112 TZ-9122	TZ-9124	TZ-9166 TZ-9167 TZ-9169
	TZ-9204	TZ-9208	TZ-9207	TZ-9211	TZ-9212 TZ-9222	TZ-9224	TZ-9266 TZ-9267 TZ-9269
OF max.	500g	450g	450g	700g	700g	450g	150g
RF min.	50g	40g	40g	150g	150g	80g	—
PT max.	18°~28°	18°~28°	18°~28°	2mm	2mm	4mm	30mm
OT min.	30°	30°	30°	4mm	4mm	5mm	—
MD max.	14°	14°	14°	0.8mm	0.8mm	1.6mm	—
OP	—	—	—	18±0.5mm	28.2±0.8mm	37±0.8mm	—

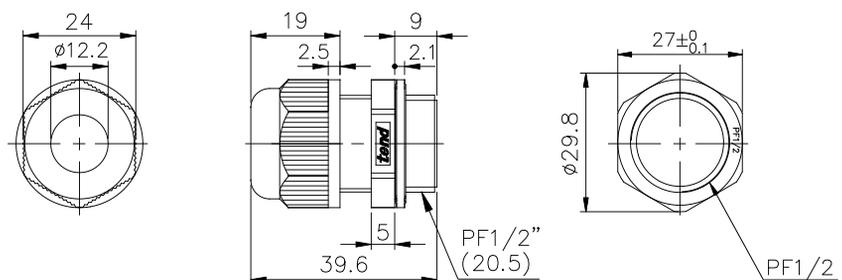
■ CONTACT CONFIGURATION



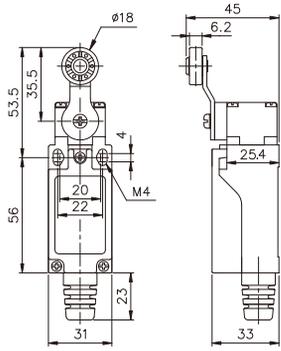
● CHARACTERISTICS

Operating speed	0.5mm to 50cm/s
Operating frequency	Mechanically : 120 operations/min. electrically : 30 operations/min.
Contact resistance	25mΩ max. (initial)
Insulation resistance	100MΩ max. (at 500 VDC)
Dielectric strength	1,000VAC, 50/60Hz, fo 1minute between non-continuous terminals 1,500VAC, 50/60Hz, for 1 minute between current-carrying and non-current-carrying parts and between each terminal and ground
Vibration	Mechanical durability: 10 to 55HZ, 1.5mm double amplitude
Shock	Mechanical durability: 1,000m/S ² (approx. 100G's) malfunction: 300m/S ² (approx. 30G's)
Ambient temperature	Operating: -5 to +65°C
Humidity	95%RH max.
Service life	Mechanically: 10,000,000 operations min. (At rated to value) Electrically: 500,000 operations min
weight	Approx. 70g to 110g
Degree of protection	IEC : IP65

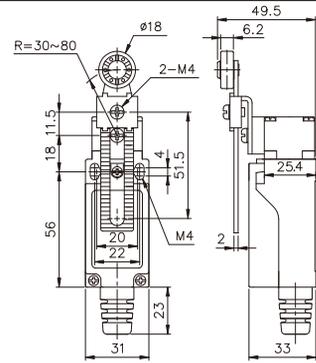
TZ-92 SERIES CABLE GLAND Diameter of cables: Ø6~12mm HPF12



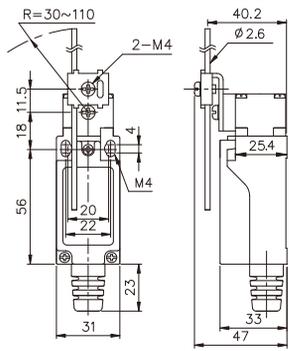
TZ-9104



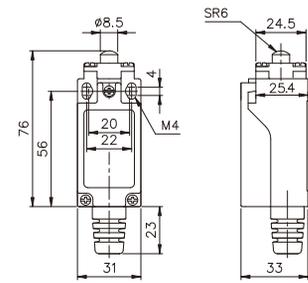
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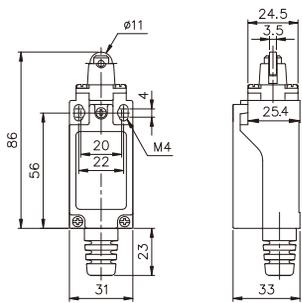
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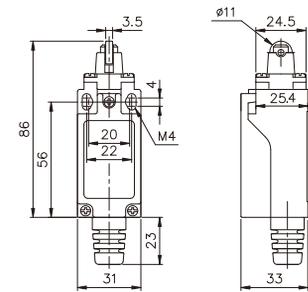
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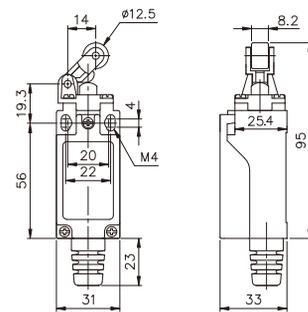
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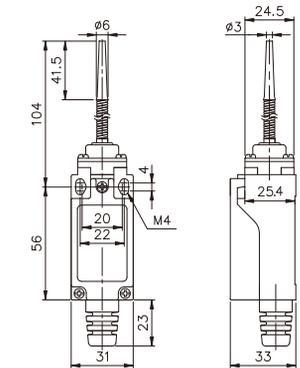
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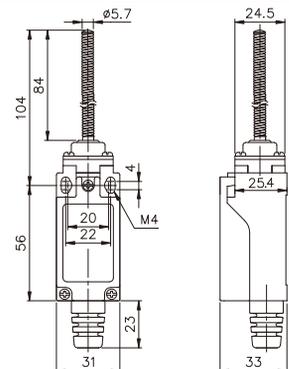
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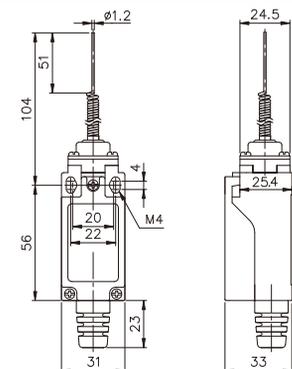
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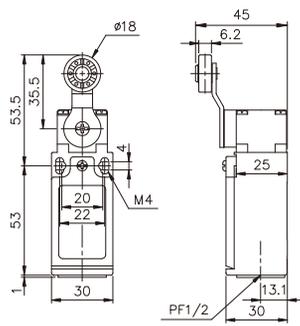
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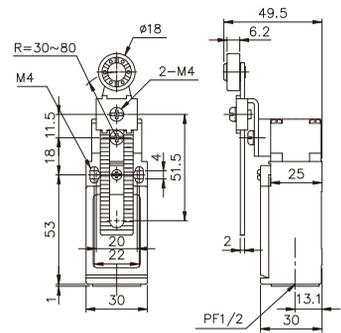
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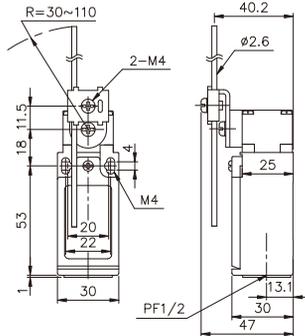
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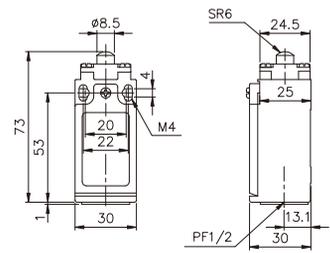
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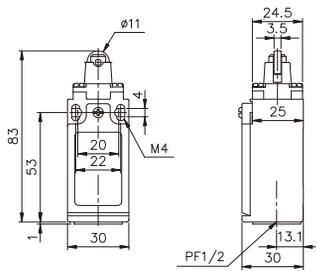
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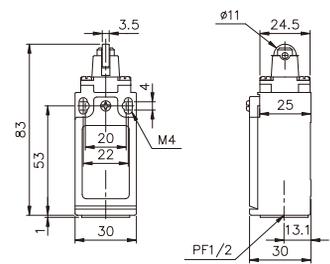
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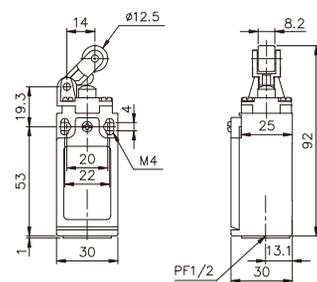
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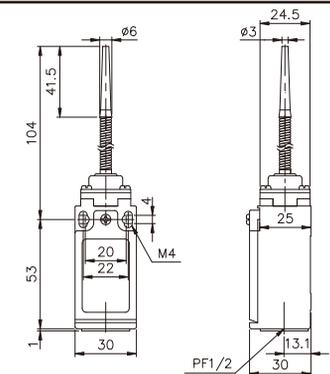
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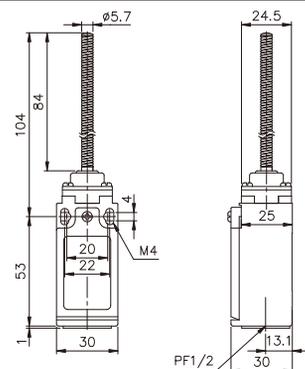
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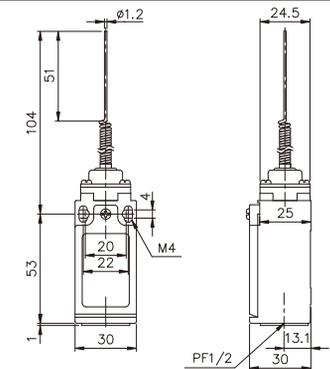
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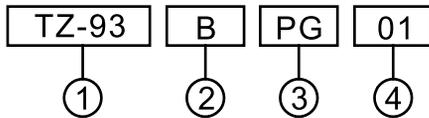
TZ-9267



TZ-9269



MODEL DESIGNATION



Designation	Signal	Description
1.Type	TZ-93	Safety switch
2. Type of Contact Block Fitted	B C	2b 1a1b
3. Conduit Entries	PG PT	PG13.5xP1.5 PT1/2x14UNC
4. Actuating keys	None 01 02 03	None Horizontal Vertical Adjustable

CHARACTERISTICS

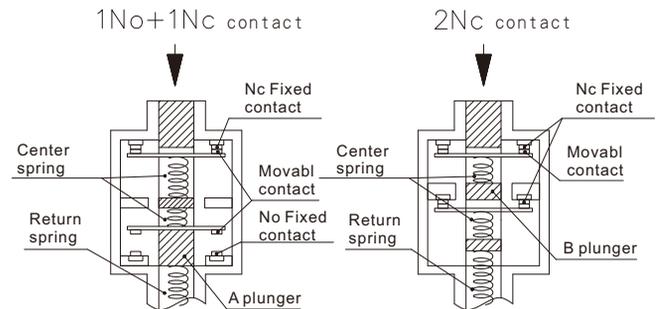
Rating	3A 240VAC, (A300)
Operating speed	0.1m~0.5m/s
Operating frequency	30 times/minute
Contact resistance	25mΩ max.(initial)
Insulation resistance	100MΩ min. (At=500VDCF)
Rated insulation vantage(Ui)	250V
Dielectric strength	AC2500V/Ump 4KV
Vibration	10~50Hzl 0.65mm double amplitude
Shock	Mechanically: Approx. 1,000m/s ² (Aprox. 100G`s) Malfunction: Approx 300m/s ² (Aprox. 30 G`s)
Ambient temperature	-30°C~+70°C
Ambient humidity	Below 95%RH
Service life	Mechanically:10,000,000 operations/min Electrcally: 150,000 operations/min.
Degree of protection	IEC : IP65
Shor-circuit protective device	10A fuse
weight	Approx. 76g

SPECIFICATIONS

RATINGS

Type	IEC60947-5-1		Ith	Rated Operating Voltage(Ue)	
	AC15	A300		120V	240V
TZ-93B	AC15	A300	10A	6A	3A
TZ-93C	AC15	A300	10A	6A	3A

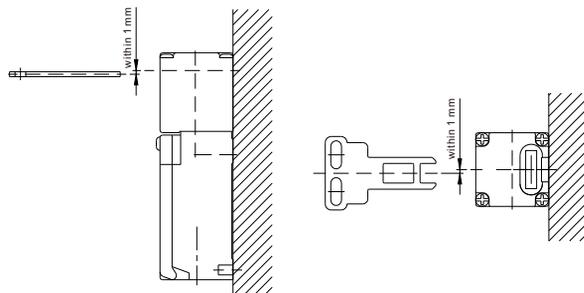
REQUIRED TO HAVE POSITIVE MACHINE



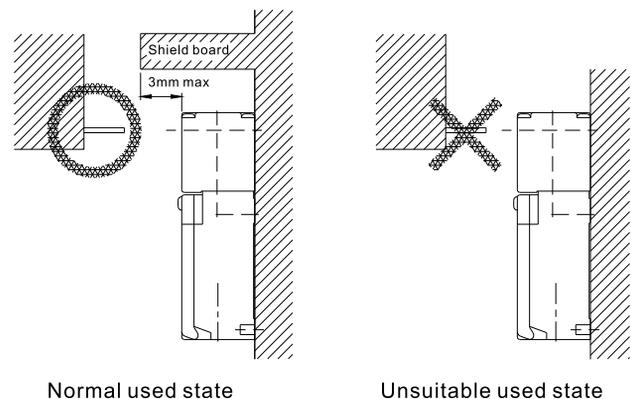
When the contact block get fire, press on the middle of the key structure, the Nc strict leaving structure can push the contact block a way cut off the movement. Ⓣ

USE ATTENTION AFFAIR

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

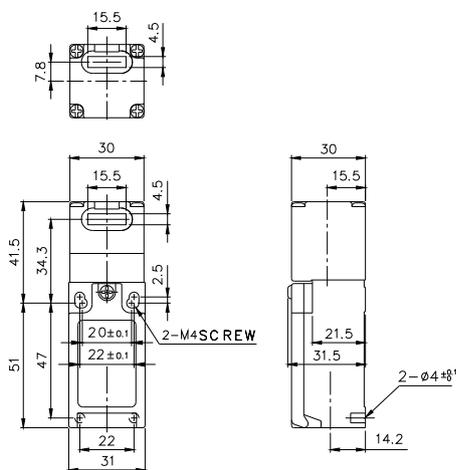


- When in use, there should put a plate on the top to prevent the key overinsert. To prevent nonmovement, the space between the plate and the switch should be under 3 mm.



DIMENSIONS

TZ-93BPG
TZ-93BPT
TZ-93CPG
TZ-93CPT

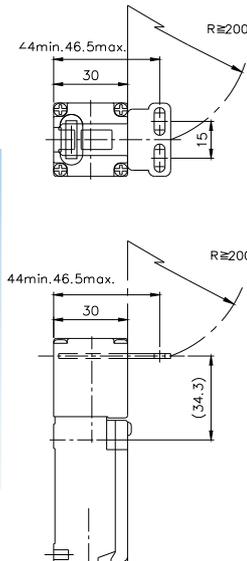


OPERATING CHARACTERISTICS

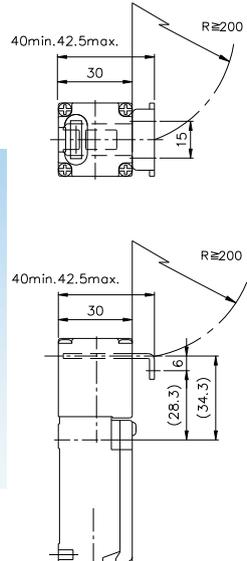
Key plug in force	max.	14.71N(1,500gf)
Key pull out force	max.	29.42N(3,000gf)
Pre travel		6±3mm
Total travel		(28mm)
Force required to have positive	min.	58.84N(6,000gf)
Positive opening travel	min.	10mm

DIMENSIONS OF OPERATING

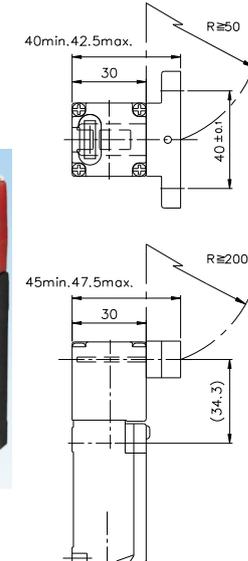
TZ-93BPG01
TZ-93BPT01
TZ-93CPG01
TZ-93CPT01



TZ-93BPG02
TZ-93BPT02
TZ-93CPG02
TZ-93CPT02

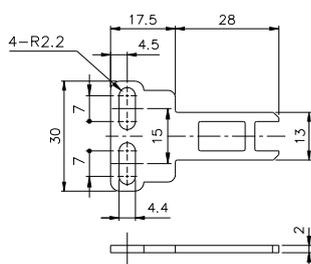


TZ-93BPG03
TZ-93BPT03
TZ-93CPG03
TZ-93CPT03

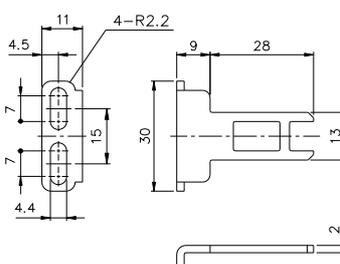


TYPE OF KEYS AND DIMENSIONS

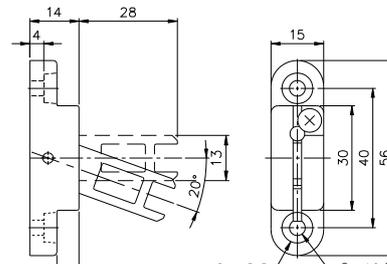
TZ93-K1



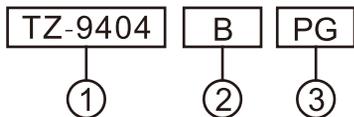
TZ93-K2



TZ93-K3



MODEL DESIGNATION



Designation	Signal	Description
1 Type	TZ-9404	Handle type
	TZ-9407	Variable handle type
	TZ-9408	Variable rod type
	TZ-9411	Column match type
	TZ-9412	Roller plunger type
	TZ-9422	Cross roller plunger type
	TZ-9424	Roller arm type
	TZ-9466	Plastic rod type
	TZ-9467	Spring type
TZ-9469	Tentacle type	
2 Type of Contact Block Fitted	B	2b
	C	1a1b
3 Conduit Entries	PG	PG13.5*P1.5

SPECIFICATIONS

RATINGS

Model	Standard EN60947-5-1		Ith	Rated Operating Voltage(Ue)	
	AC15	A300		120V	240V
TZ-94B	AC15	A300	10A	6A	3A
TZ-94C	AC15	A300	10A	6A	3A

OPERATING CHARACTERISTICS(2NC)

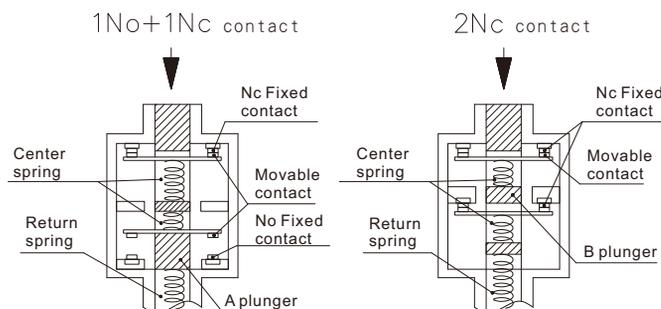
Model	TZ-9404B	TZ-9408B	TZ-9407B	TZ-9411B	TZ-9412B TZ-9422B	TZ-9424B	TZ-9466B TZ-9467B TZ-9469B
OF max.	500g	500g	500g	650g	700g	650g	150g
RF min.	50g	50g	50g	150g	150g	150g	—
PT max.	18°~27°	18°~27°	18°~27°	2mm	2mm	4mm	30mm
OT min.	40°	40°	40°	4mm	4mm	5mm	—
OP	—	—	—	19.3±0.5mm	28.6±0.8mm	37.3±0.8mm	—

OPERATING CHARACTERISTICS(1NC/1NO)

Model	TZ-9404C	TZ-9408C	TZ-9407C	TZ-9411C	TZ-9412C TZ-9422C	TZ-9424C
OF max.	500g	500g	500g	650g	700g	650g
RF min.	50g	50g	50g	150g	150g	150g
PT max. *1	18°~27°	18°~27°	18°~27°	2mm	2mm	4mm
PT *2	(44°)	(44°)	(44°)	(2.9mm)	(2.9mm)	(5.2mm)
OT min.	40°	40°	40°	4mm	4mm	5mm
OP	—	—	—	19.3±0.5mm	28.6±0.8mm	37.3±0.8mm

REQUIRED TO HAVE POSITIVE MACHINE

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.



CHARACTERISTICS

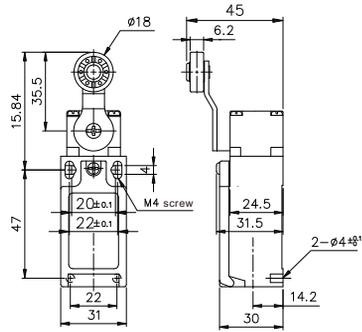
Operating speed	1mm~50cm/s
Operating frequency	max:30times/minute
Contact resistance	25mΩ max.(initial)
Insulation resitain	100mΩ min.(at 500VDC)
Rated insulation valtage(Ui)	300V
Dielectric strength	AC2500V/Umip 4KV
Vibration	10~55Hz,1.5mm double amplitude
Shock	Mechanically: Approx.1,000m/s²(Aprox. 100G's) Malfunction: Approx. 300m/s²(Aprox.30G's)
Ambient temperature	-30°~+70°C (No freeze)
Ambient humidity	Below 95%RH
Service life	Mechanically:10,000,000 operations/min. Electrically:500,000 operations/min.
Degree of protection	IEC class IP65

TZ-9466, 9467, 9469 limit for 2B

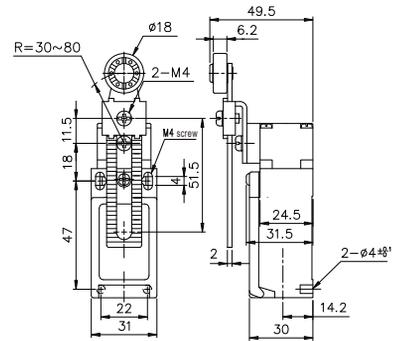
*1 for NC strict

*2 for NO strict

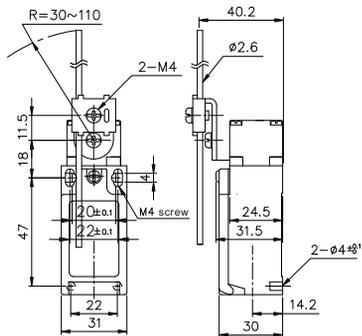
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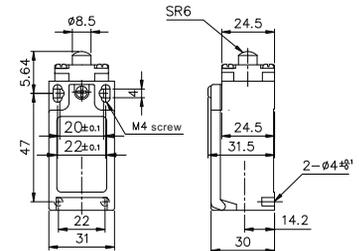
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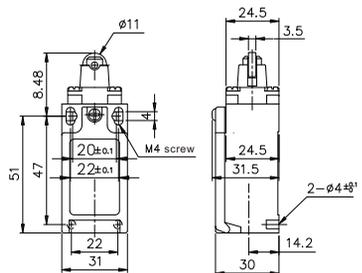
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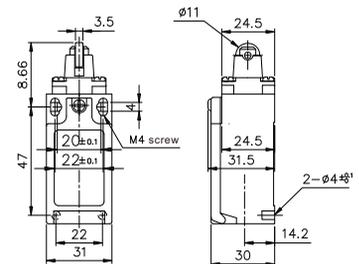
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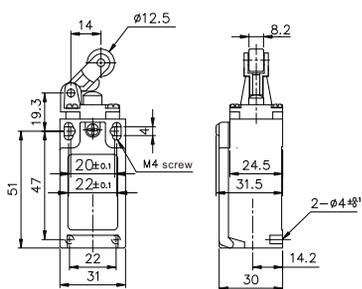
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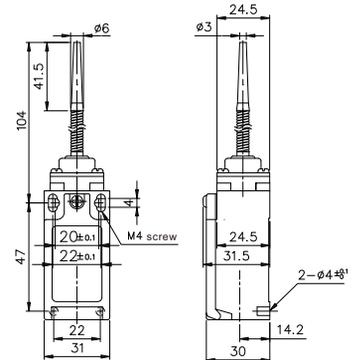
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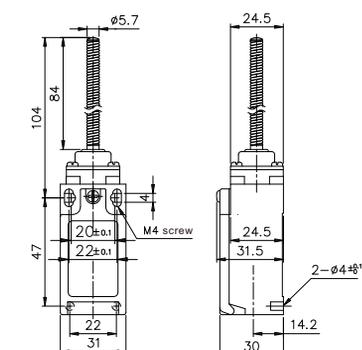
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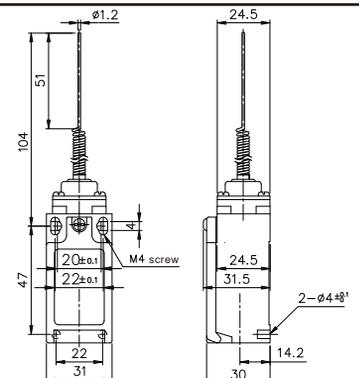
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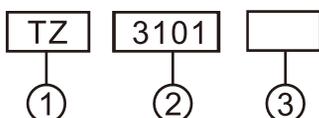
TZ-9467



TZ-9469



MODEL DESIGNATION



Designation	Signal	Description
1.Mounting Hole	TZ	Standard
	TZS	Standard with side entry
	TZP	Standard with plug
2.Type	3101	Column match type
	3102	Roller plunger type
	3103	Cross roller plunger type
	3104	Roller handle type
	3107	Variable handle type
	3108	Variable rod type
	3110	Column match type
	3111	Sealed pin plunger
	3112	Sealed roller plunger
	3113	Sealed cross roller plunger
	3166	Plastic rod type
3169	Tentacle type	
3.Length	None	3M
	2	2M

OPERATION

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
125VAC	5 (0.1)		1.5	0.7	3		2.5	1.3
250VAC	3		1	0.5	2		1.5	0.8
8VDC	5 (0.1)		2		5	4	3	
14VDC	5 (0.1)		2		4	4	3	
30VDC	4 (0.1)		2		3	3	3	
125VDC	0.4		0.05		0.4		0.05	
250VDC	0.2		0.03		0.2		0.03	

SPECIFICATIONS

- DPDS limit switch for multiple applications.
- Rugged aluminum alloy diecast housing.
- High mechanical strength.
- Oil resistance, waterproof and dust proof structure.

CHARACTERISTICS

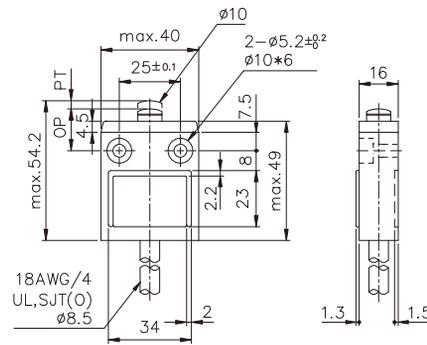
Rating	5A 125VAC, 3A 250VAC
Operating speed	1mm~1m/s
Operating frequency	Mechanically: 120 operations/min. Electrically: 30 operations/min.
Contact resistance	15mΩ max - (initial)
Insulation resistance	100MΩ min (at 500VDC)
Dielectric strength	1,000VAC, 50/60Hz, for 1 minute between non-continuous terminals 1,500VAC, 50/60Hz, for 1 minute between current-carrying and non-current-carrying parts and between each terminal and ground
Vibration	10~55Hz, 1.5mm double amplitude
Shock	Mechanically: Approx. 1,000m/s ² (approx. 100G's) Malfunction: 500m/s ² (approx. 50G's)
Ambient temperature	-10°C~+70°C
Humidity	Below 95%RH
Service life	Mechanically: 1,000 operations/min. Electrically: 20 operations/min.
Degree of protection	IEC: IP67
Weight	Approx. 360g (cable 3m) Approx. 540g (cable 5m)

OPERATING CHARACTERISTICS

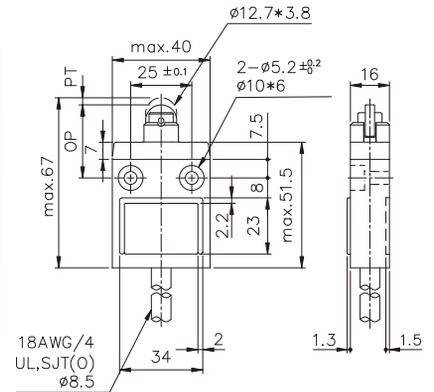
Type	TZ-3101	TZ-3102	TZ-3103	TZ-3104 TZ-3108	TZ-3110
OF Max.	1,200gf(11.77N)	1,200gf(11.77N)	1,200gf(11.77N)	580gf(5.69N)	1,200gf(11.77N)
RF Min.	450gf(4.41N)	450gf(4.41N)	450gf(4.41N)	150gf(1.47N)	450gf(4.41N)
PT Max.	1.8mm	1.8mm	1.8mm	25°	1.8mm
OT Min.	3mm	3mm	3mm	40°	3mm
MD Max.	0.2mm	0.2mm	0.2mm	3°	0.2mm
OP	15.7±1mm	28.5±1mm	28.5±1mm	—	28.5±1mm

Type	TZ-3111	TZ-3112	TZ-3113	TZ-3166	TZ-3169
OF Max.	1,800gf(17.65N)	1,800gf(17.65N)	1,800gf(17.65N)	150gf(1.47N)	150gf(1.47N)
RF Min.	450gf(4.41N)	450gf(4.41N)	450gf(4.41N)	—	—
PT Max.	1.8mm	1.8mm	1.8mm	15°	15°
OT Min.	3mm	3mm	3mm	—	—
MD Max.	0.2mm	0.2mm	0.2mm	—	—
OP	24.9±1mm	34.3±1mm	34.3±1mm	—	—

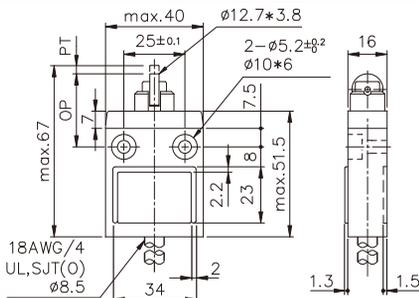
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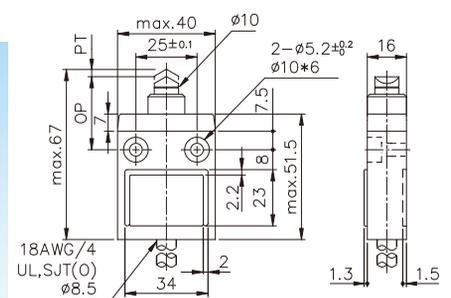
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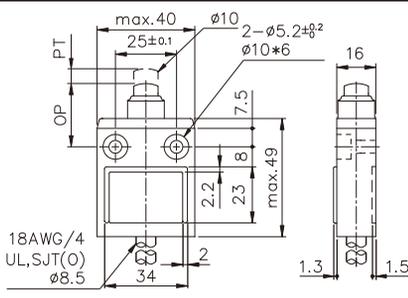
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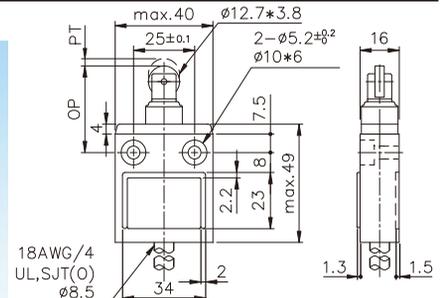
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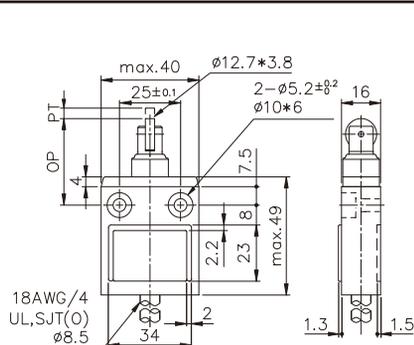
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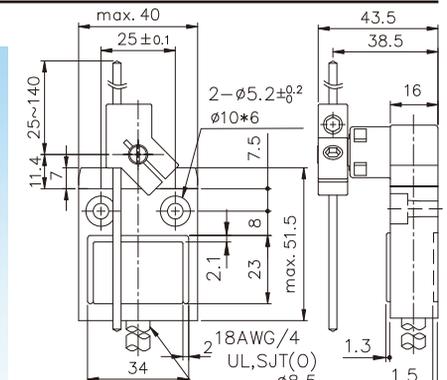
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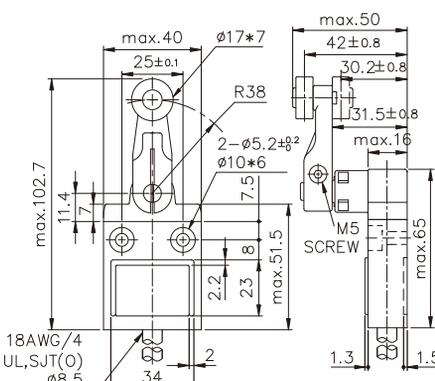
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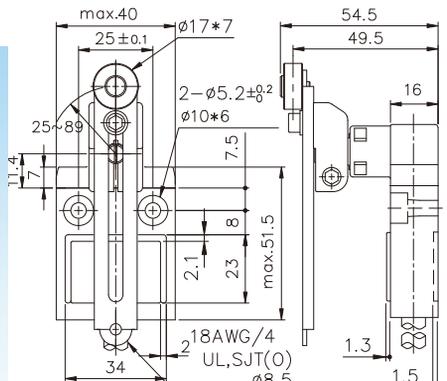
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TZ-3104

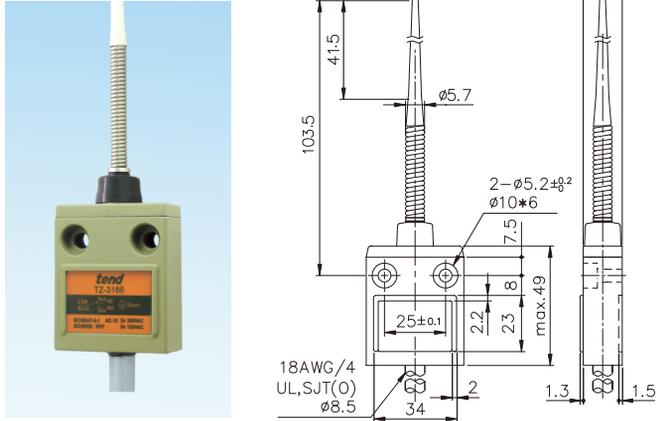


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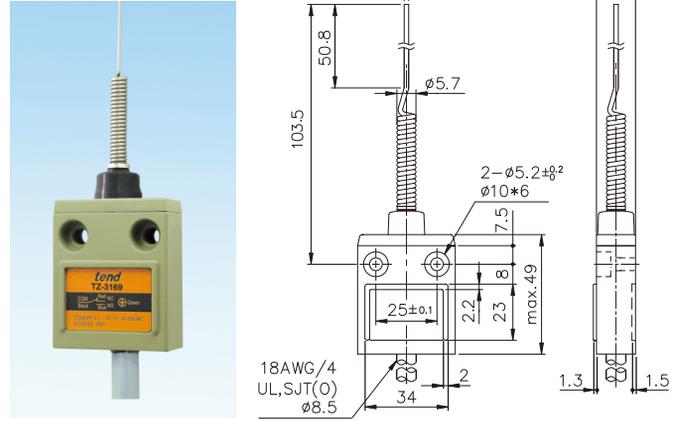


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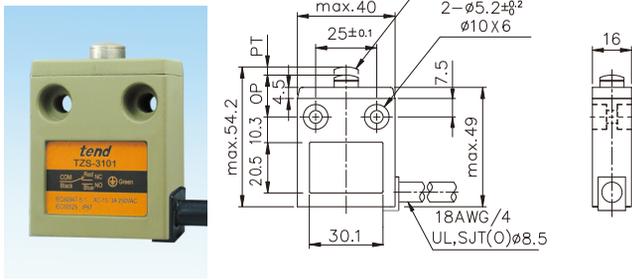
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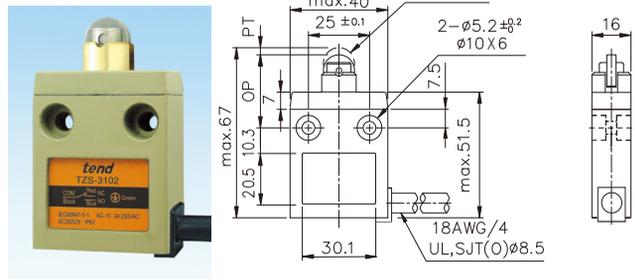
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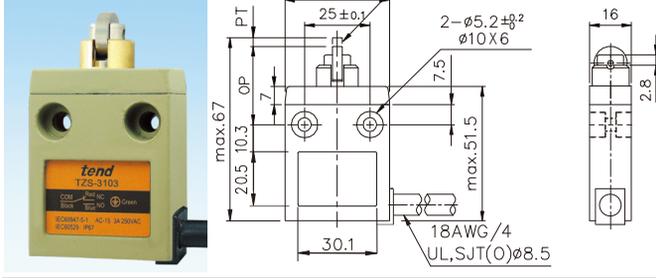
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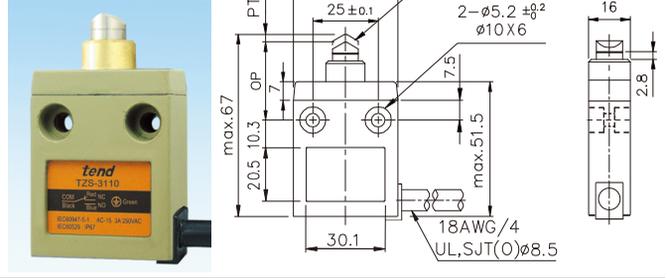
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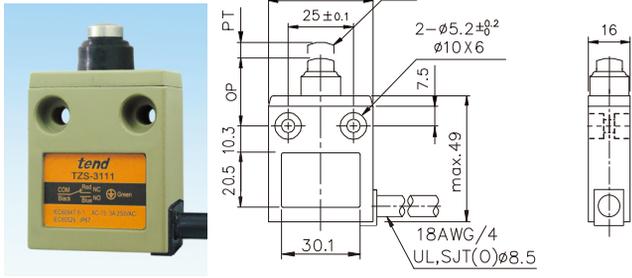
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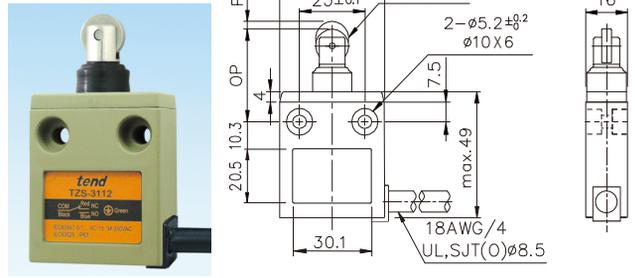
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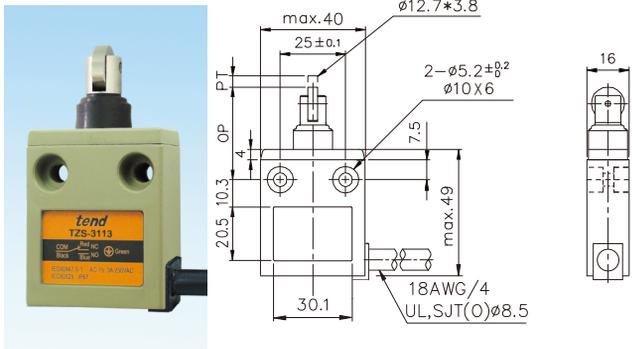
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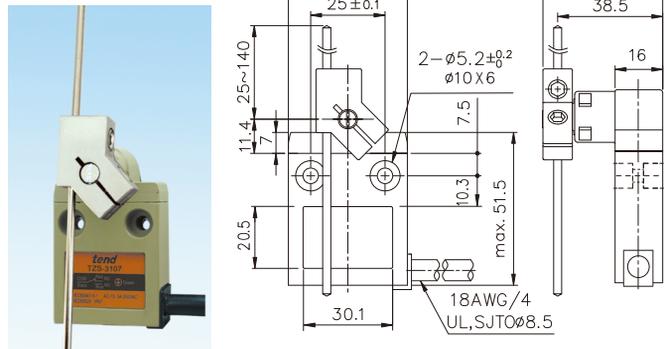
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TZS-3113

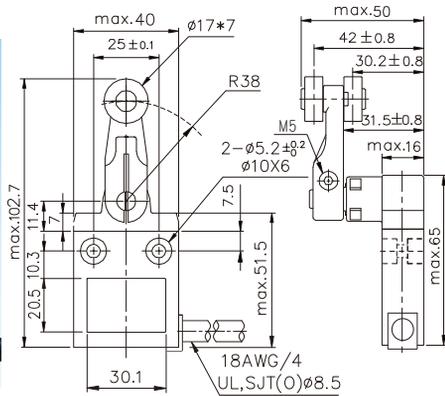


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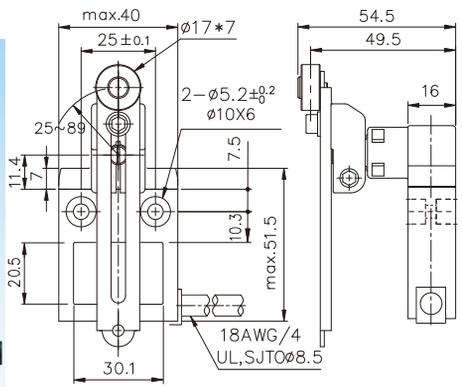


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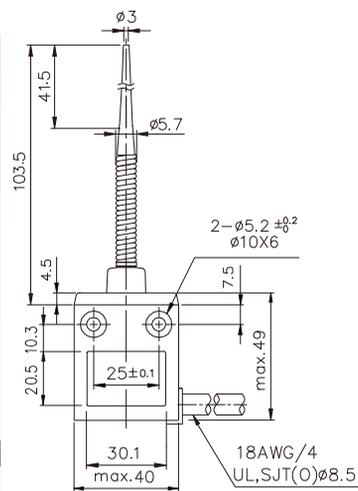
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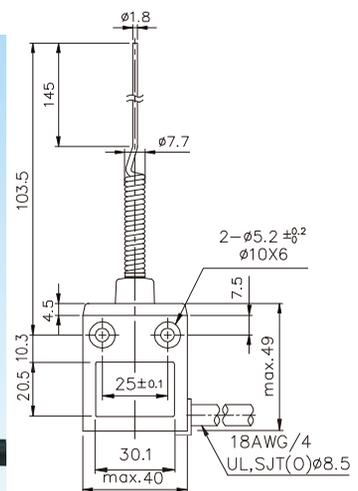
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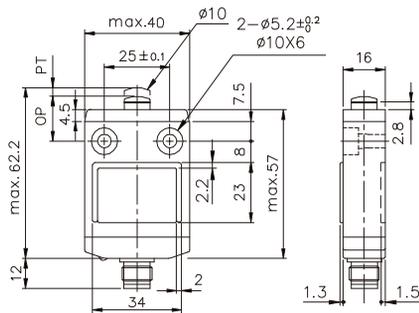
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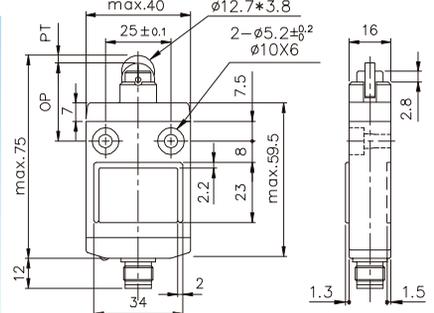
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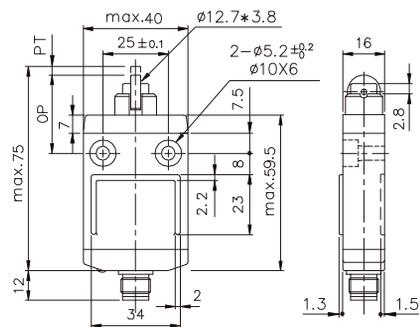
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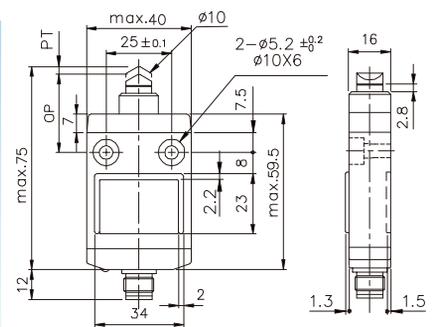
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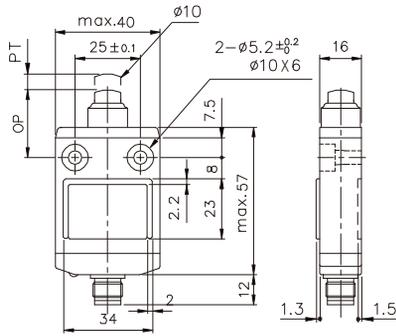


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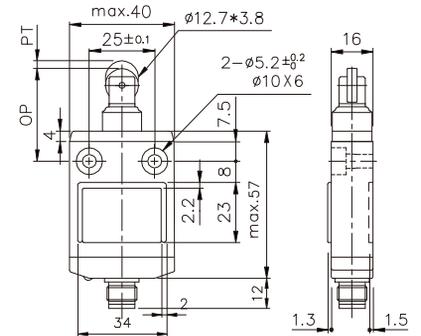


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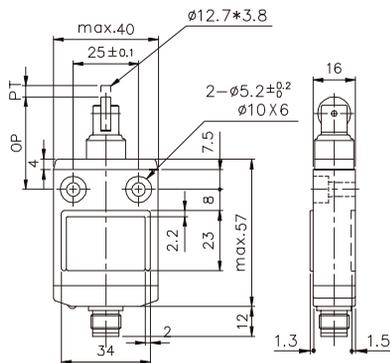
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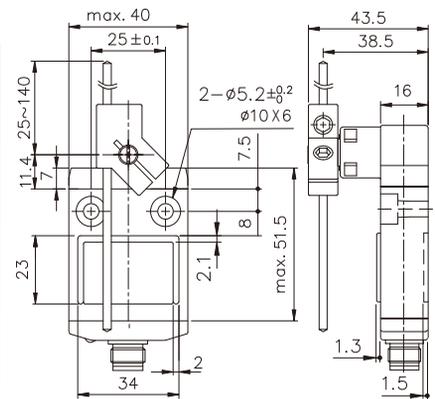
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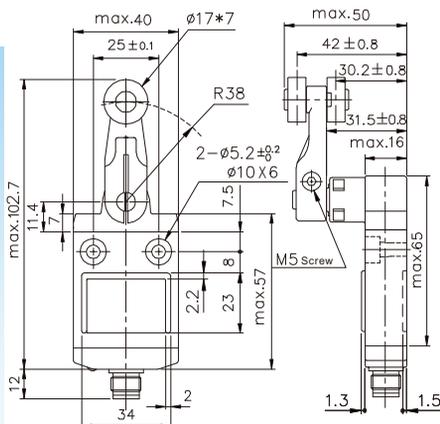
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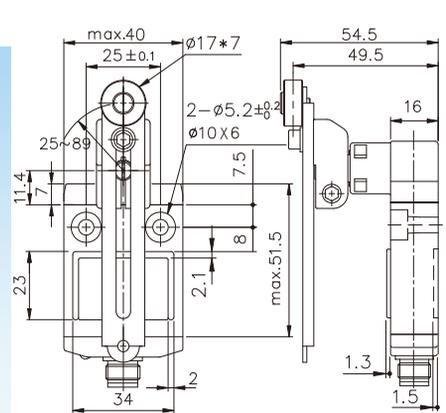
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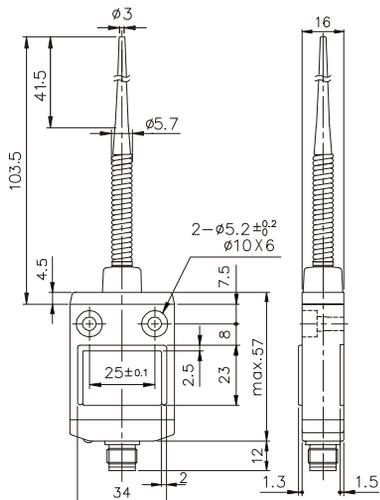
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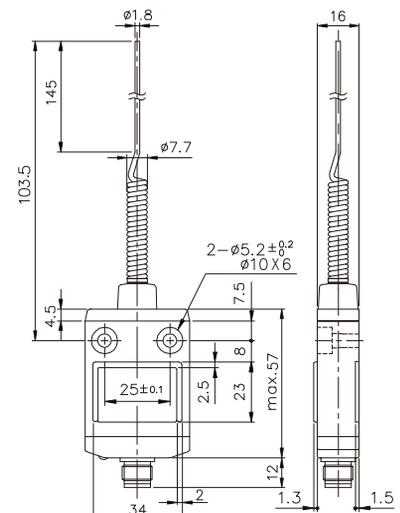
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TZP-3166

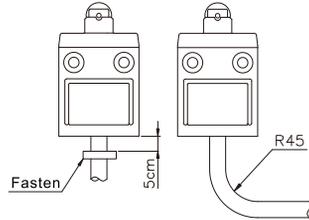


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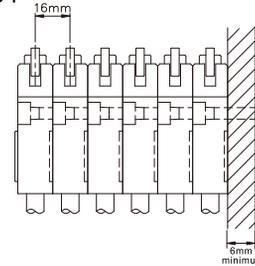
FASTENING OF THE SWITCH CABLE

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



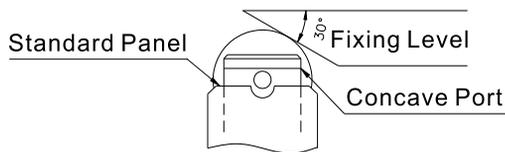
SWITCH BANK MOUNTING

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

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° , the surface finish of the fixing level should be over $\nabla\nabla\nabla$, the hard hardness is from hv400~500. When installing, the position of the concave part should be above the standard panel.



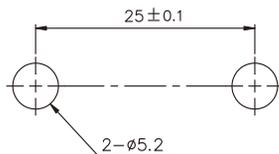
MOUNTING

Recommended tightening torque according to the following form.

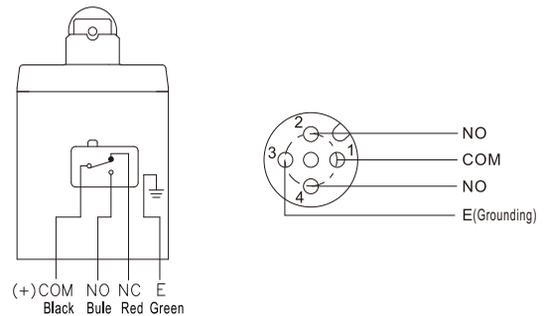
Model	Screw Type	Torque
1	M5 fastening screws	4.9~5.88N.m (50~60kgf.cm)
2	M3.5 installing screws	0.78~0.88N.m (8~9kgf.cm)

MOUNTING HOLES

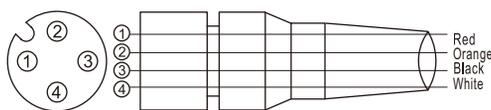
mount the switch body to a rigid mounting panel using two m5 screws.



CONTACT TYPES

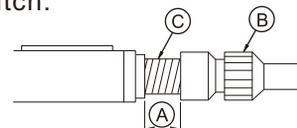


CONNECTOR



CONNECTOR TYPE

Rotate fixing screw B by hand and fix it to connector C of the limit switch.



Tighten B to the base of C (A: zero gap).

Please tighten by hand.

Do not use pliers.

