乐清市永得电器有限公司
YUEQING YONGDE ELECTRIC CO., LTD

诚招区域代理商：

微信公众平台
Wechat Platform

永得电气网站
Website

TMAZTZ

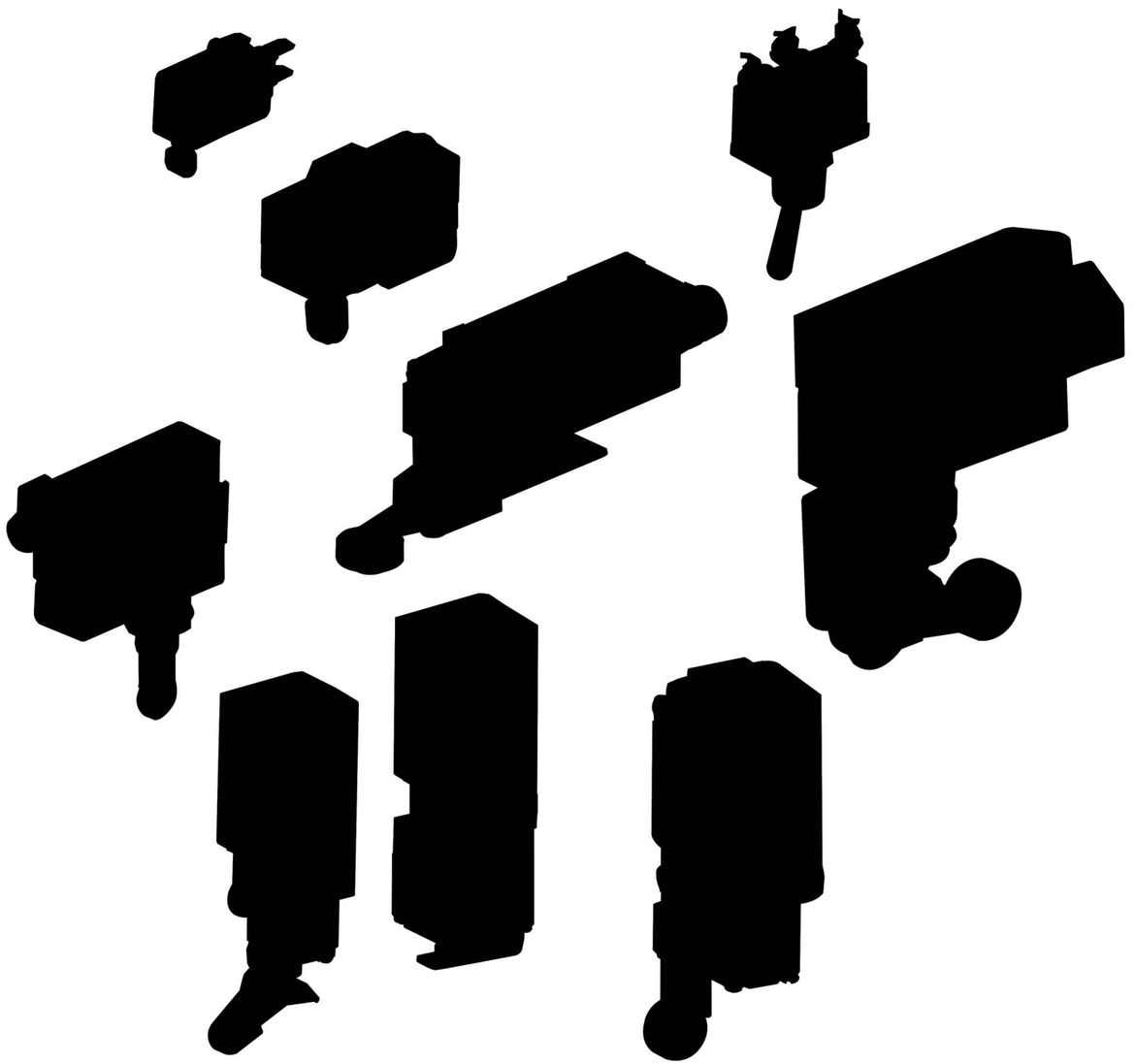
2022 版

永得工控开关

YONGDE INDUSTRIAL SWITCH



一次选择 永得信赖



About TMAZTZ®

关于永得

永得工控成立于 1998 年，20 年来专注于行程开关、限位开关、微动开关、密封开关、防水开关、押扣开关、钮子开关、脚踏开关的研发与生产。

公司产品先后通过了国家 CCC 认证与欧盟 CE 认证，主要产品线均获得德国 TUV 认证。畅销全国各地及东南亚、中东、欧洲和美洲，产品广泛应用于机床、注塑机、汽车厂、立体停车库、环保、防灾建筑、机械生产以及各种流水线等设备的电路控制。

公司本着以“专业、创新、国际化”为发展理念，坚持先进的管理模式，严格的生产制度，良好的售后服务体系，专业的工作队伍为您提供最优质的产品和服务。我们诚挚地希望能够与您一起促进更为国际化的发展和见证更为璀璨的未来。

TMAZTZ, founded in 1998, is specialized in the R & D and manufacturing of travel switches, limit switches, micro switches, sealed switches, waterproof switches, toggle switches and foot switches.

Our switches have passed the certifications such as CCC , TUV and CE successively. The products not only are popular with the Chinese market, but also well received in Southeast Asia, Middle East, Europe and America , are widely applied to machine tools, injection molding machines, automobile manufacture plants, space-parking systems, environmental protection, hazard resistant buildings, machinery manufacturing. TMAZTZ, abiding by the development philosophy of "specialty, innovation, internationalization" , will provide the best products and best service for you depending on the advanced management mode, strict production , professional staff and perfect after-sale service system. We sincerely invite you to our promote the development Internationlization ,together with you to witness the bright future.




TZ-8 限位开关 P 01


TSA 限位开关 P 03


TLS-1、TLS-3 限位开关 P 05


WL 限位开关 P 08


HL 限位开关 P 11


TZ-6 封闭式开关 P 13


TZ-3 防水限位开关 P 15


T4N 小型安全限位开关 P 18


T4N-R 手动复位限位开关 P 22


T4NS/T4NS-SK 安全门开关 P 25


V15 微动开关 P 28


TM 微动开关 P 31


TM1-1 防溅微动开关 P 34


TZ-7 卧式限位开关 P 35


动力押扣开关 P 37


T5 钮子开关 P 39


TFS 脚踏开关 P 42

TMAZTZ® 永得工控开关

特征 Features

- ◎ 约本公司纵型限位开关的 1/3 的小型化设计
- ◎ 端子部全开放构造，便于布线
- ◎ 保护构造 IP65
- ◎ Compact new design approximately 1/3 the size of TMAZTZ vertical Limit Switches.
- ◎ Structure enables the terminal section to be fully opened for easy wiring.
- ◎ Degree of protection: IP65

接触形式 Contact form



额定值 Ratings

额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
突入电流 Inrush Current	N.C.:24A 以下、N.O.:12A 以下 N.C: below 24A, N.O: below 12A							

注：1、电感性负载之功率因素在 0.4 以上 (AC)。时间常数在 7msec 以下 (DC)。
2、灯泡负载之突入电流为稳定状态电流之 10 倍。马达负载之突入电流为稳定状态电流之 6 倍。
3、带弹簧系列产品，操作体的使用范围为从弹簧的前端到弹簧全长的 1/3 以内。

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

特性 Characteristics

操作速度 Operation speed	5mm 至 0.5m/sec 5mm-0.5m/sec
动作频率 Operating frquency	电气：30 次 / 分 Electical: 30 operations/minute
接点电阻 Contact resistance	25mΩ (初期) 25mΩ max. (initial value)
绝缘电阻 Insulation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min. (at 500VDC)
电介强度 Dielectric strength	非连续端子间 1,000VAC, 50/60Hz 持续 1 分钟 1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	载电流与无载电流零件间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	端子和接地之间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between each terminal and ground
振动 Vibration	10 至 50Hz, 1.5mm 双振幅 10-55Hz, 1.5mm double amplitude
冲击 Shock	机械耐久 :1,000m/Sec²(约 100G’S) 误动作耐久 :300m/Sec²(约 30G’S) Mechanical durable: 1, 000m/Sec² (about 100G’S) Malfunction: 300m/Sec² (about 30G’S)
周围温度 Ambient temperature	使用时 :-10~+65℃ (没有结冰 With no icing)
湿度 Humidity	95%RH 以下 <95% RH
重量 Weight	约 130 至 190g About 130 to 190g
电气寿命 Electrical life	500000 次以上 Above 500000
保护构造 Degree of protection	IP65

动作特性 Operating Characteristics

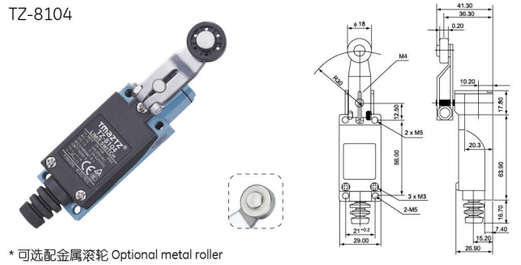
动作特性	型号 Model	TZ-8104	TZ-8107	TZ-8108	TZ-8111	TZ-8112	TZ-8122	TZ-8166	TZ-8167	TZ-8168	TZ-8169
动作力	OF 最大 (Max)	5.88N	5.88N	7.84N	9.8N	9.8N	9.8N	0.88N	0.88N	0.88N	0.88N
回复力	RF 最小 (Min)	0.49N	0.69N	0.49N	2.94N	2.94N	2.94N	—	—	—	—
预行程	PT 最大 (Max)	20°	20°	20°	1.5mm	1.5mm	1.5mm	30mm	30mm	30mm	30mm
过行程	OT 最小 (Min)	75°	75°	75°	4mm	4mm	4mm	—	—	—	—
应差距离	MD 最大 (Max)	10°	10°	10°	1.2mm	1.2mm	1.2mm	—	—	—	—
总行程	TT 最小 (Min)	95°	95°	95°	5.5mm	5.5mm	5.5mm	—	—	—	—
动作位置	OP	—	—	—	26±0.8mm	37±0.8mm		—	—	—	—

注：1、TZ8107 的动作特性是摆杆长度为 30mm 时的值
2、TZ8108 的动作特性是摆杆长度为 R30 时的值

TMAZTZ® 永得工控开关

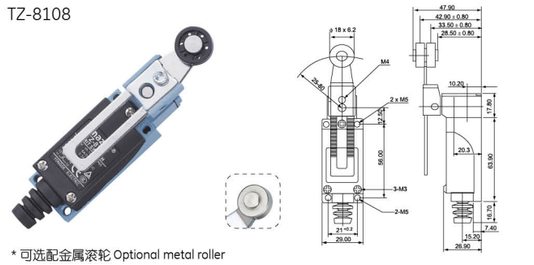
外观和尺寸 Appearance and Dimension

TZ-8104



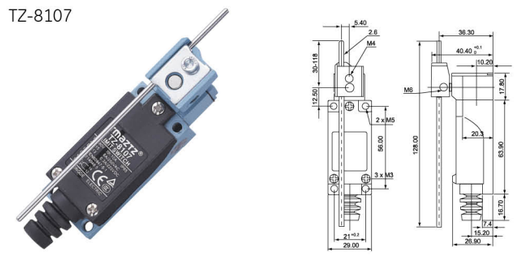
* 可选配金属滚轮 Optional metal roller

TZ-8108

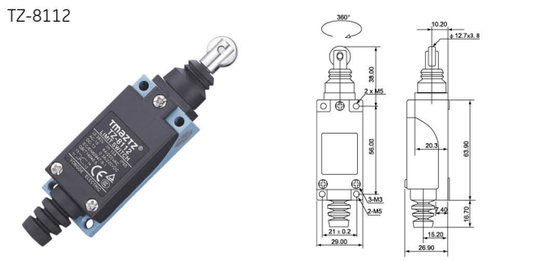


* 可选配金属滚轮 Optional metal roller

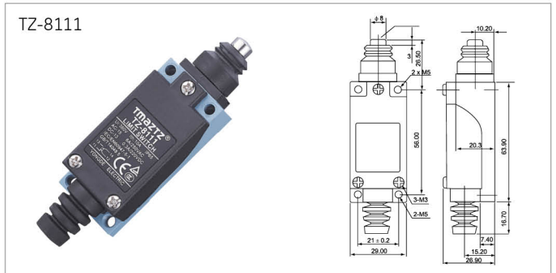
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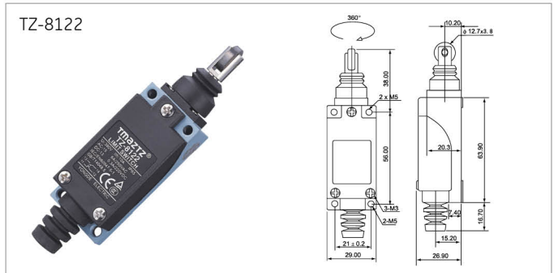
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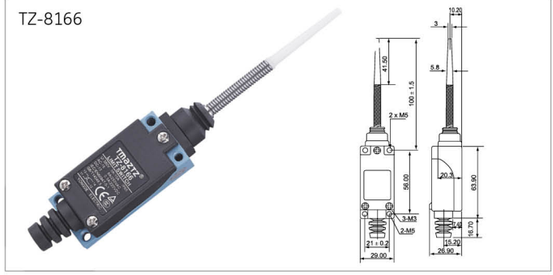
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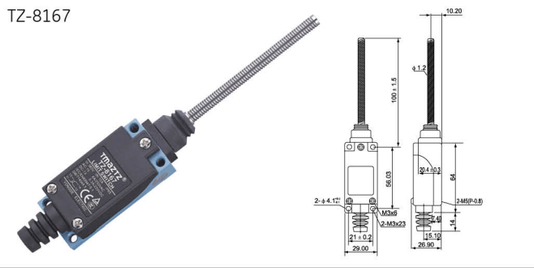
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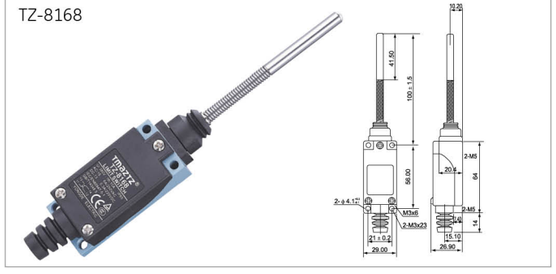
TZ-8166



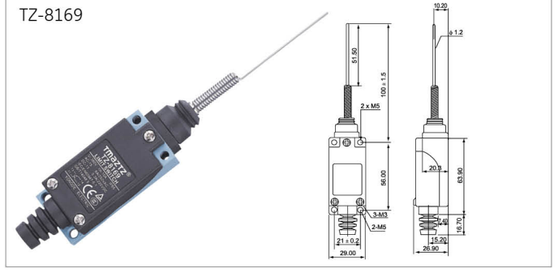
TZ-8167



TZ-8168



TZ-8169

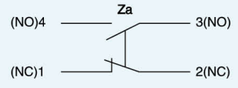


特征 Features

- ◎ 坚硬金属外壳，极大摇臂角度 ±95°
- ◎ 不锈钢滚轮，冲头及弹簧
- ◎ 导管连接器尺寸标配 M18 × 1.5

- ◎ Strong metal outer shell, swing arm max.±95°
- ◎ Stainless steel idler wheel, punch and spring
- ◎ Selective M18x1.5 cable gland

接触形式 Contact form



额定值 Ratings

额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
突入电流 Inrush Current	N.C.:24A 以下、N.O.:12A 以下 N.C: below 24A, N.O: below 12A							

注 :1、电感性负载之功率因素在 0.4 以上 (AC)。时间常数在 7msec 以下 (DC)。
2、灯泡负载之突入电流为稳定状态电流之 10 倍。马达负载之突入电流为稳定状态电流之 6 倍。
3、带弹簧系列产品，操作体的使用范围为从弹簧的前端到弹簧全长的 1/3 以内。

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

特性 Characteristics

操作速度 Operation speed	5mm 至 0.5m/sec 5mm-0.5m/sec
动作频率 Operating frquency	电气 : 30 次 / 分 Electical: 30 operations/minute
接点电阻 Contact resistance	25mΩ(初期) 25mΩ max. (initial value)
绝缘电阻 Insulation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min. (at 500VDC)
电介强度 Dielectric strength	非连续端子间 1,000VAC, 50/60Hz 持续 1 分钟 1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	载电流与无载电流零件间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	端子和接地之间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between each terminal and ground
振动 Vibration	10 至 50Hz, 1.5mm 双振幅 10-55Hz, 1.5mm double amplitude
冲击 Shock	机械耐久 :1,000m/Sec²(约 100G’S) 误动作耐久 :300m/Sec²(约 30G’S) Mechanical durable: 1, 000m/Sec² (about 100G’S) Malfunction: 300m/Sec² (about 30G’S)
周围温度 Ambient temperature	使用时 :-10~+65℃ (没有结冰 With no icing)
湿度 Humidity	95%RH 以下 <95% RH
重量 Weight	约 195 至 246g About 195 to 246g
电气寿命 Electrical life	500000 次以上 Above 500000
保护构造 Degree of protection	IP65

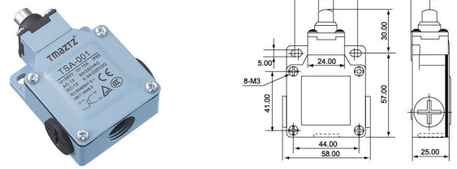
动作特性 Operating Characteristics

动作特性	Operating Characteristics	型号 Model	TSA-001	TSA-003	TSA-012	TSA-021	TSA-041	TSA-031	TSA-051	TSA-061	TSA-071	TSA-081
操作力	Operating force	OF 最大 (Max)	7.84N	7.84N	7.84N	3.92N	3.92N	3.92N	3.92N	1.47N	1.47N	1.47N
回弹力	Release force	RF 最小 (Min)	3.92N	3.92N	3.92N	0.98N	0.98N	0.98N	0.98N	0.49N	0.49N	0.49N
前预行程	Pre-travel	PT 最大 (Max)	1.8mm	1.8mm	1.8mm	20°	20°	20°	20°	30mm	30mm	30mm
触发位置	Tripping position	TP ± 10%	2.0mm	2.0mm	2.0mm	22.5°	22.5°	22.5°	22.5°	22.5°	22.5°	22.5°
行程移动分辨率	Movement differential	MD 最大 (Max)	1.2mm	1.2mm	1.2mm	10°	10°	10°	10°	14°	14°	14°
触后行程	Over travel	OT 最小 (Min)	4.0mm	4.0mm	4.0mm	75°	75°	75°	75°	20mm	20mm	20mm
累积总行程	Total travel	TT 最小 (Min)	5.8mm	5.8mm	5.8mm	95°	95°	95°	95°	50mm	50mm	50mm
摇臂转换分角度	Rotary indexing					22.5°	22.5°	22.5°	22.5°			

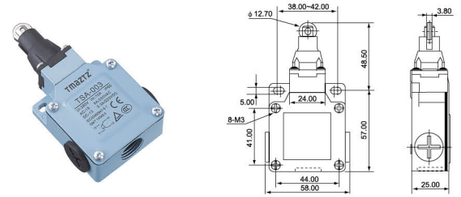
TSA 限位开关 Limit Switch

外观和尺寸 Appearance and Dimension

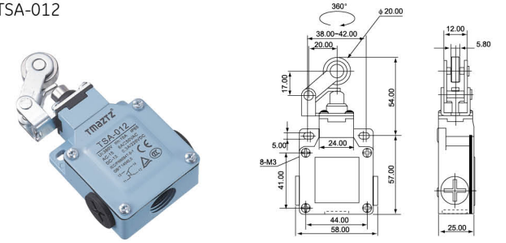
TSA-001



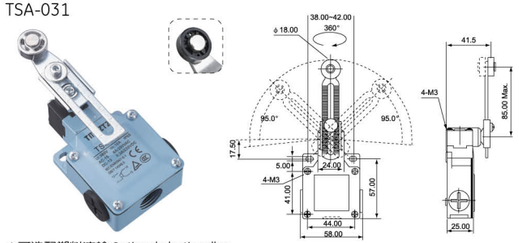
TSA-003



TSA-012

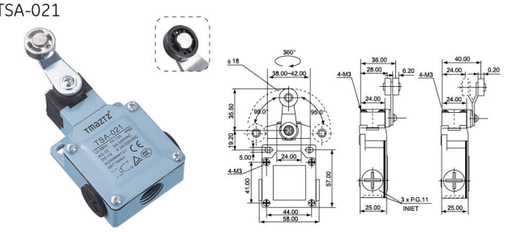


TSA-031



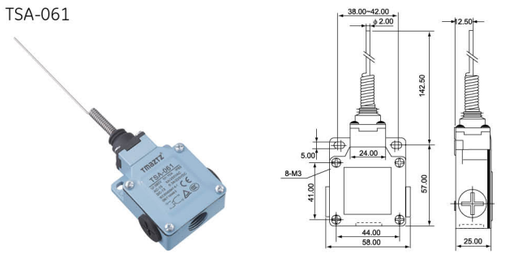
* 可选配塑料滚轮 Optional plastic roller

TSA-021

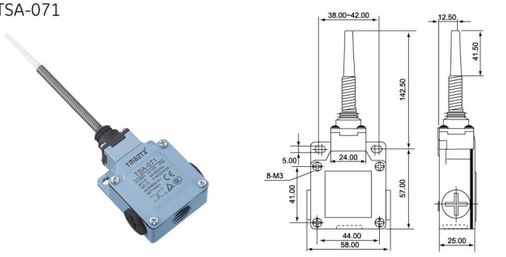


* 可选配塑料滚轮 Optional plastic roller

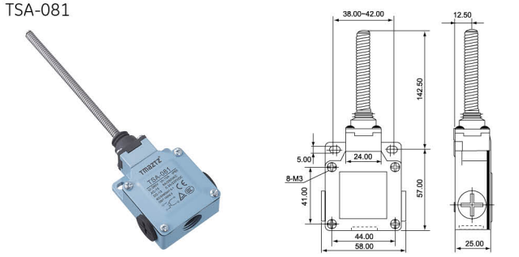
TSA-061



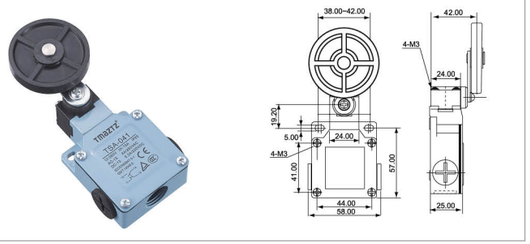
TSA-071



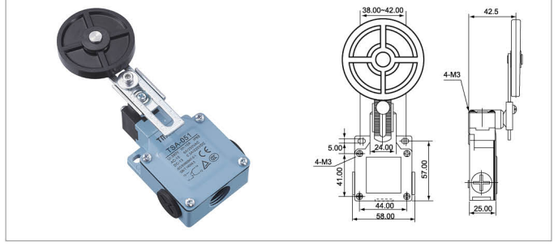
TSA-081



TSA-041



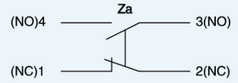
TSA-051



特征 Features

- ◎ 经济塑料型
- ◎ 不锈钢滚轮，冲头及弹簧
- ◎ 特大 ±95° 摇臂摆幅
- ◎ 导管连接器尺寸标配 M20 × 1.5
- ◎ Economical & plastic type
- ◎ Stainless steel roller, punch and spring
- ◎ Swing amplitude, extra large ± 95°
- ◎ M20x1.5 cable gland that can be equipped

接触形式 Contact form





额定值 Ratings

额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	5	5	1.5	0.7	3	3	2	1
250VAC	5	5	1	0.5	3	3	1.5	0.8
8VDC	5	5	3	3	5	4	3	3
14VDC	5	5	3	3	4	4	3	3
30VDC	5	5	3	3	4	4	3	3
125VDC	0.4	0.4						
250VDC	0.2	0.2						
突入电流 Inrush Current	N.C.:24A 以下、N.O.:12A 以下 N.C: below 24A, N.O: below 12A							

注：1、电感性负载之功率因素在 0.4 以上 (AC)。时间常数在 7msec 以下 (DC)。
2、灯泡负载之突入电流为稳定状态电流之 10 倍。马达负载之突入电流为稳定状态电流之 6 倍。
3、带弹簧系列产品，操作体的使用范围为从弹簧的前端到弹簧全长的 1/3 以内。

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

特性 Characteristics

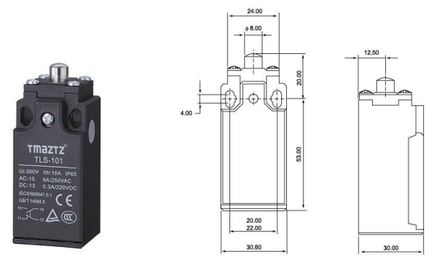
操作速度 Operation speed	5mm 至 0.5m/sec 5mm-0.5m/sec
动作频率 Operating frquency	电气 : 30 次 / 分 Electical: 30 operations/minute
接点电阻 Contact resistance	25mΩ (初期) 25mΩ max. (initial value)
绝缘电阻 Insulation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min. (at 500VDC)
电介强度 Dielectric strength	非连续端子间 1,000VAC, 50/60Hz 持续 1 分钟 1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	载电流与无载电流零件间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	端子和接地之间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between each terminal and ground
振动 Vibration	10 至 50Hz, 1.5mm 双振幅 10-55Hz, 1.5mm double amplitude
冲击 Shock	机械耐久 :1,000m/Sec²(约 100G’S) 误动作耐久 :300m/Sec²(约 30G’S) Mechanical durable: 1, 000m/Sec² (about 100G’S) Malfunction: 300m/Sec² (about 30G’S)
周围温度 Ambient temperature	使用时 :-10~+65℃ (没有结冰 With no icing)
湿度 Humidity	95%RH 以下 <95% RH
重量 Weight	约 59 至 113g(TLS-1) About 59 to 113g 约 72 至 123g(TLS-3) About 72 to 123g
电气寿命 Electrical life	500000 次以上 Above 500000
保护构造 Degree of protection	IP65

动作特性 Operating Characteristics

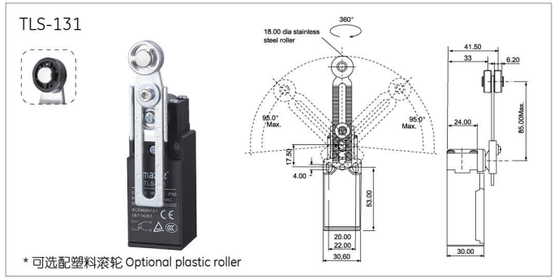
动作特性	Operating Characteristics	型号 Model TLS	101 301	103 303	111 311	121 321	127 327	131 331	161 361	171 371	181 381	191 391
操作力	Operating force	OF 最大 (Max)	6.86N	6.86N	6.86N	4.9N	6.86N	4.9N	0.98N	0.98N	0.98N	4.9N
回弹力	Release force	RF 最小 (Min)	1.96N	1.96N	1.96N	0.98N	1.96N	0.98N	0.392N	0.392N	0.392N	0.98N
前预行程	Pre-travel	PT 最大 (Max)	1.8mm	1.8mm	1.8mm	20°	1.8mm	20°	30mm	30mm	30mm	20°
触发位置	Tripping position	TP ± 10%	2.0mm	2.0mm	2.0mm	22.5°	2.0mm	22.5°	22.5°	22.5°	22.5°	22.5°
行程移动分辨率	Movement differential	MD 最大 (Max)	1.2mm	1.2mm	1.2mm	10°	1.2mm	10°	14°	14°	14°	10°
触后行程	Over travel	OT 最小 (Min)	4.0mm	4.0mm	4.0mm	75°	4.0mm	75°	20mm	20mm	20mm	75°
累积总行程	Total travel	TT 最小 (Min)	5.8mm	5.8mm	5.8mm	95°	5.8mm	95°	50mm	50mm	50mm	95°
摇臂转换分角度	Rotary indexing					22.5°		22.5°				22.5°

外观和尺寸 Appearance and Dimension

TLS-101

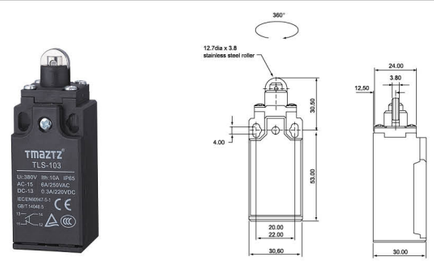


TLS-131

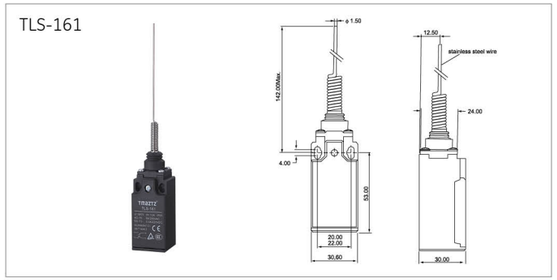


* 可选配塑料滚轮 Optional plastic roller

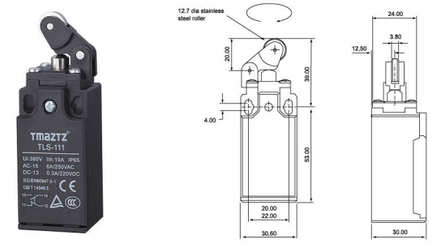
TLS-103



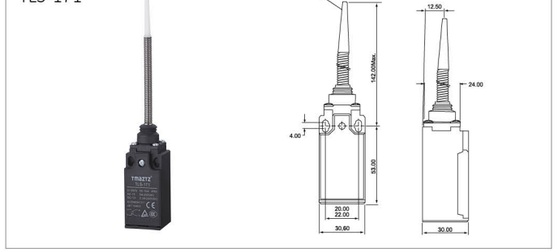
TLS-161



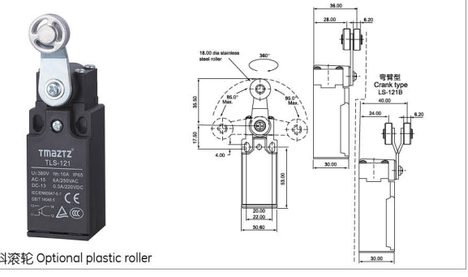
TLS-111



TLS-171

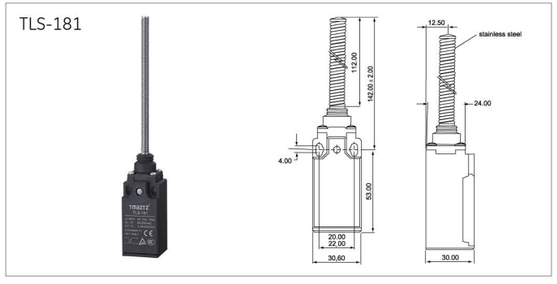


TLS-121

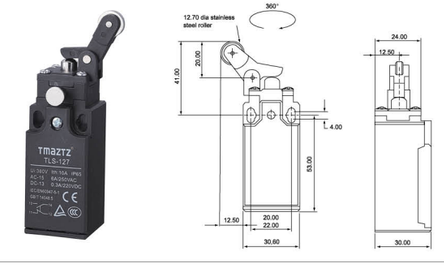


* 可选配塑料滚轮 Optional plastic roller

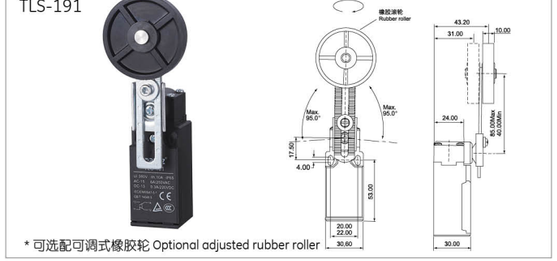
TLS-181



TLS-127



TLS-191

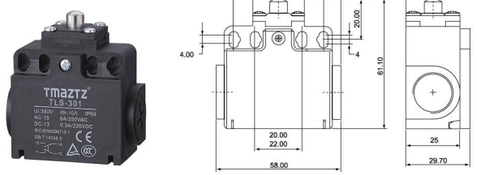


* 可选配可调式橡胶轮 Optional adjusted rubber roller

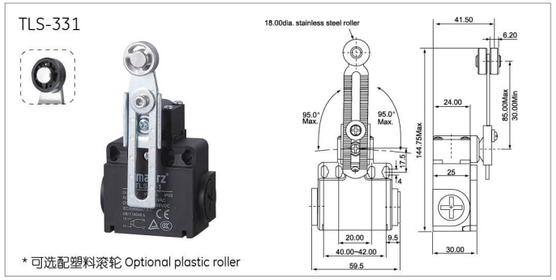
tmaztz® 永得工控开关

外观和尺寸 Appearance and Dimension

TLS-301

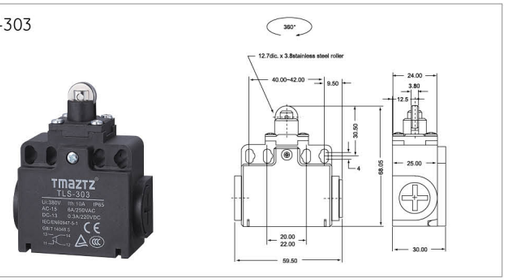


TLS-331

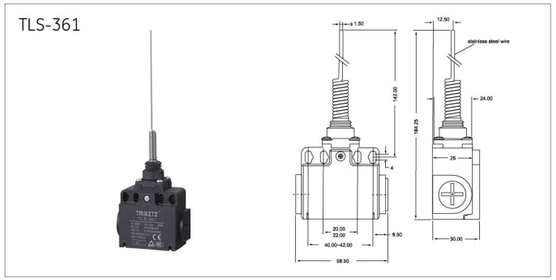


* 可选配塑料滚轮 Optional plastic roller

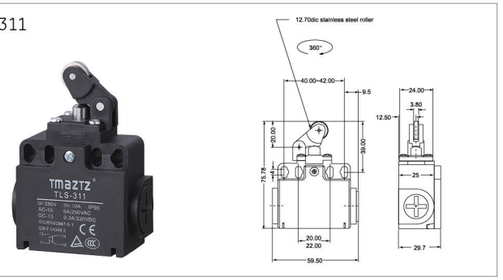
TLS-303



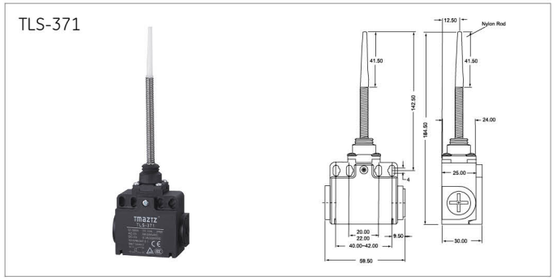
TLS-361



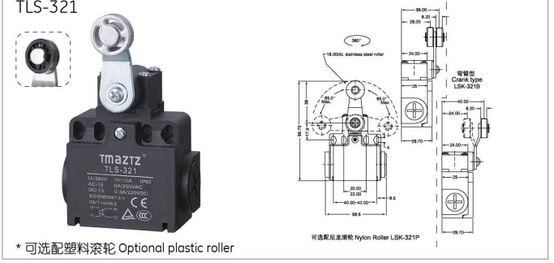
TLS-311



TLS-371



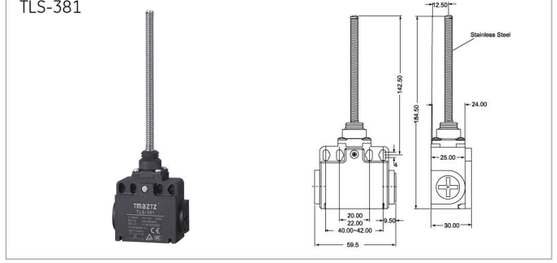
TLS-321



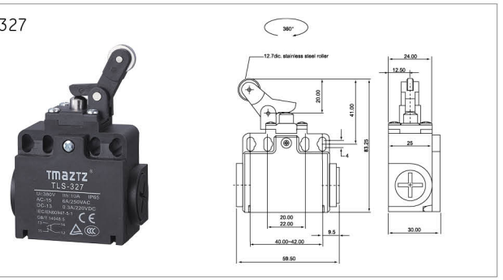
* 可选配塑料滚轮 Optional plastic roller

※选配尼龙滚轮 Nylon Roller LSK-321P

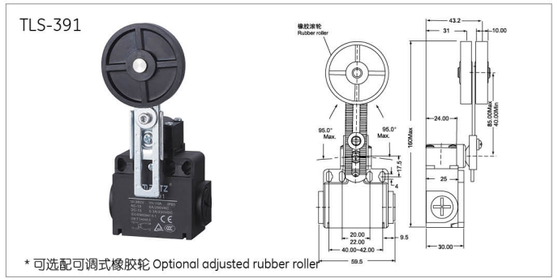
TLS-381



TLS-327



TLS-391



* 可选配可调式橡胶轮 Optional adjusted rubber roller

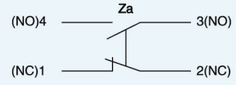
tmaztz® 永得工控开关

特征 Features

- 双回路型限动开关，用途广泛
- 具坚固之一体铸造铝合金外壳
- 高机械强度
- 具耐油、防水和防压结构
- 因装有设定位置指示板，故维护容易
- 引动器种类多，方便使用
- 内藏接点座有双簧片设计，机械寿命长
- 内附标配尺寸 M20×1.5 导管连接器

- Double-circuit type of limit switch, is widely used
- With strong aluminum cast outer shell
- High mechanical strength
- Structure preventing oil, water and pressure
- Indicating plate with setting position is installed in it, so it is easy to maintain
- Various of actuators is taken convenience for using
- Built-in contact stand has double-spring, so it has long mechanical life
- Equipped M20x1.5 cable gland

接触形式 Contact form



额定值 Ratings

额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	10		3	1.5	10		5	2.0
250VAC	5		2	1	5		3	1.0
480VAC	3		1.5	0.8	3		1.5	0.8
600VAC	1		1	0.5	1.5		1	0.5
8VDC	10		6	3	10		6	
14VDC	10		6	3	10		6	
30VDC	6		4	3	6		4	
125VDC	0.8		0.2	0.2	0.8		0.2	
250VDC	0.4		0.1	0.1	0.4		0.1	

浪涌电流 Surge current	NC	30A 以下 (under)
	NO	20A 以下 (under)

注：1、电感性负载：功率因素 =0.4；时间常数 =7msec。
2、灯泡负载之突入电流为稳定状态电流之 10 倍。马达负载之突入电流为稳定状态电流之 6 倍。
3、带弹簧系列产品，操作体的使用范围为从弹簧的前端到弹簧全长的 1/3 以内。

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

特性 Characteristics

操作速度 Operation speed	1mm 至 1m/s(WLCA2 型) 1mm-1m/s
动作频率 Operating frquency	电气：30 次 / 分 Electical: 30 operations/minute
接点电阻 Contact resistance	25mΩ 以下 (初期) 25mΩ max. (initial value)
绝缘电阻 Insulation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min. (at 500VDC)
电介强度 Dielectric strength	非连续端子间 1,000VAC, 50/60Hz 持续 1 分钟 1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity 载电流与无载电流零件间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts 端子和接地之间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between each terminal and ground
振动 Vibration	10 至 50Hz, 1.5mm 双振幅 10-55Hz, 1.5mm double amplitude
冲击 Shock	机械耐久 :1,000m/Sec²(约 100G’S) 误动作耐久 :300m/Sec²(约 30G’S) Mechanical durable: 1, 000m/Sec² (about 100G’S) Malfunction: 300m/Sec² (about 30G’S)
周围温度 Ambient temperature	使用时 :-10~+80℃ (没有结冰 With no icing)
湿度 Humidity	95%RH 以下 <95% RH
重量 Weight	约 275g(WLCA2-2) About 275g
电气寿命 Electrical life	500000 次以上 Above 500000
保护构造 Degree of protection	IP66

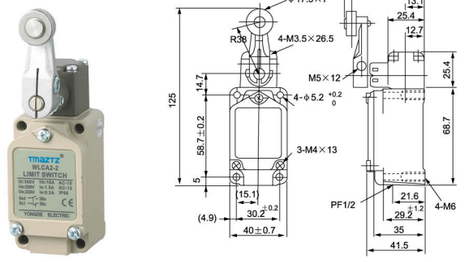
动作特性 Operating Characteristics

动作特性	型号 Model	WLCA2-2	WL CA12-2-Q	WL CA12-2-QD	WLCL	WLD	WLD1 D2	WLD3	WL NJ,NJ30,NJ-2,NJ-S2
动作力	OF 最大 (Max)	8.83N	8.83N	8.83N	2.55N	26.67N	26.67N	26.67N	1.47N
回复力	RF 最小 (Min)	0.49N	0.49N	0.49N	0.1N	8.92N	8.92N	8.92N	—
预行程	PT 最大 (Max)	25° ±5°	25° ±5°	25° ±5°	25° ±5°	1.7mm	1.7mm	1.7mm	40±20mm
过行程	OT 最小 (Min)	60°	60°	60°	60°	6.4mm	5.6mm	4mm	—
应差距离	MD 最大 (Max)	16°	16°	16°	16°	1mm	1mm	1mm	—

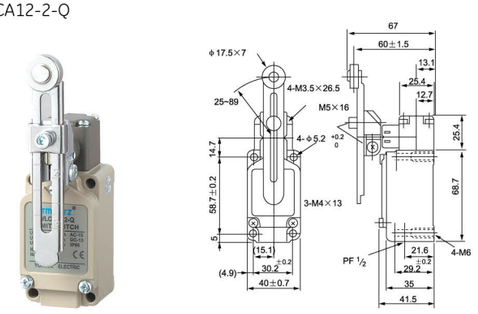
动作特性	型号	WL CA32-41, CA32-42, CA32-43, CA32-44
摆杆反转力：最大		11.77N
摆杆反转预行程		50° ±5°
开关预行程：最小		55°
开关过行程：最大		35°

外观和尺寸 Appearance and Dimension

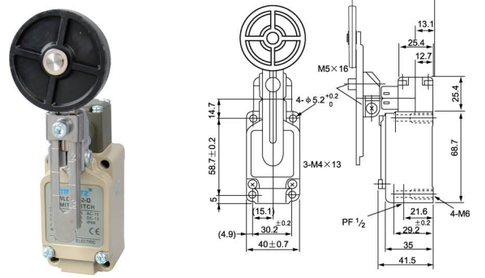
WLCA2-2



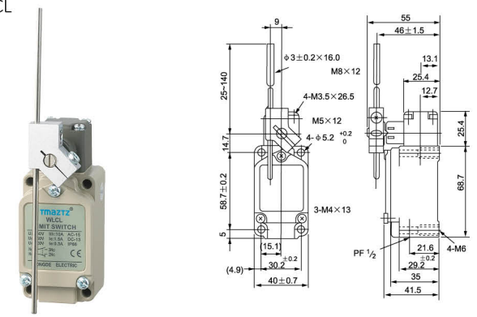
WLCA12-2-Q



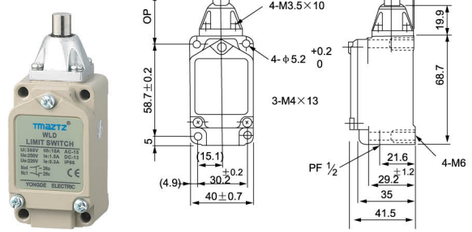
WLCA12-2-QD



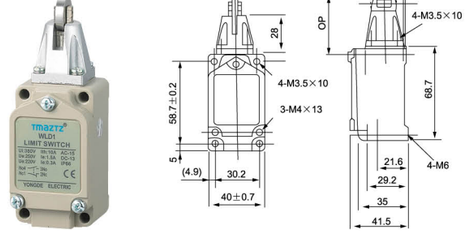
WLCL



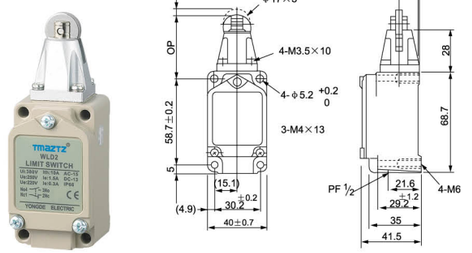
WLD



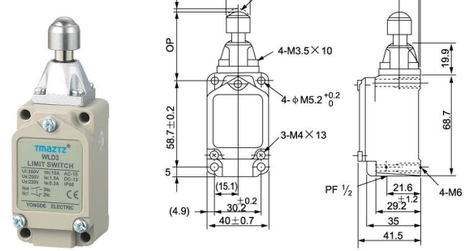
WLD1



WLD2

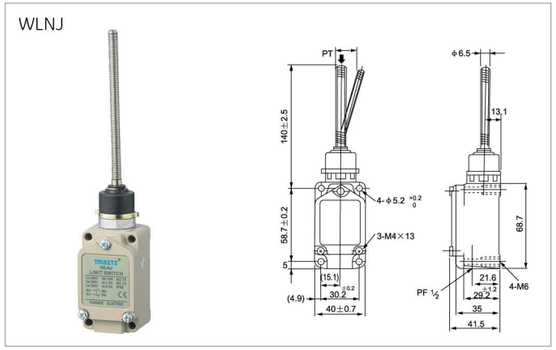


WLD3

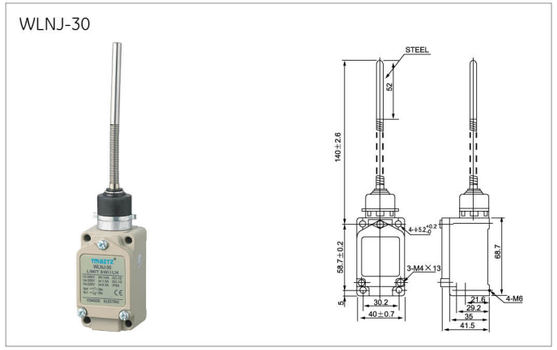


外观和尺寸 Appearance and Dimension

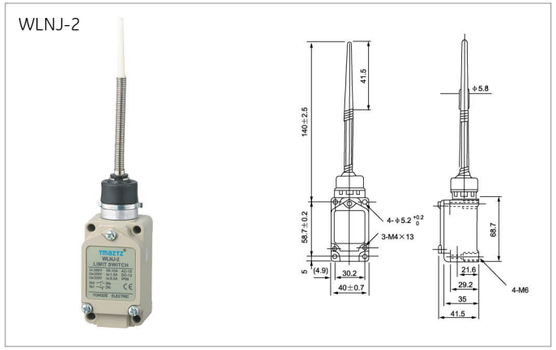
WLNJ



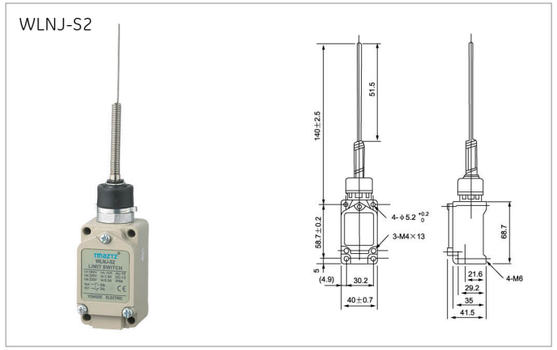
WLNJ-30



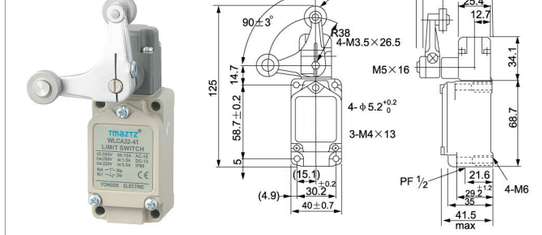
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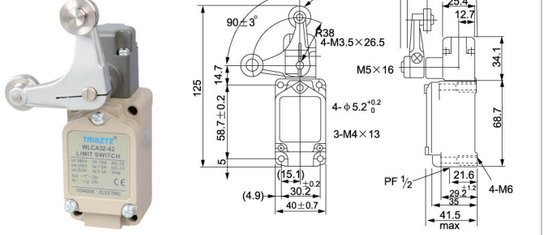
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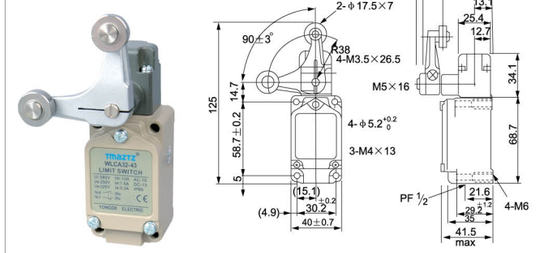
WLCA32-41



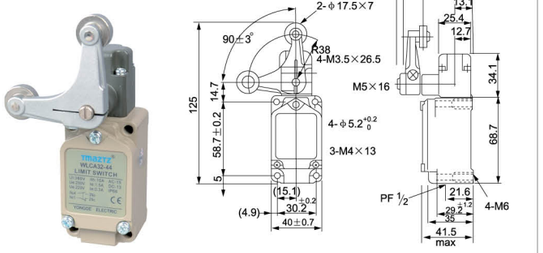
WLCA32-42



WLCA32-43



WLCA32-44



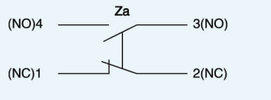
TMAZTZ® 永得工控开关

特征 Features

- ◎ 头部、外壳和罩盖配有坚固表面以保持强度。
- ◎ 独特的头部结构提供了大 OT 的平稳操作。
- ◎ 导管开口设计易于接线。
- ◎ 印刷设备、成型设备和照明设备的理想之选。(在接触油、水、雨水的环境中请选用 WL 或 TZ-3 等具有高密封性的开关。)

- ◎ The Head, Box, and Cover mate with ridged surfaces to maintain strength. A unique Head structure provides a large OT for smooth operation.
- ◎ Easy-to-wire conduit opening design.
- ◎ Ideal for application in printing machines, forming machines, and light machines.(High Switches with high sealing characteristics, such as WL or
- ◎ TZ-3 Switches, in locations subject to oil, water, or precipitation.)

接触形式 Contact form



额定值 Ratings

额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		电动机负载 Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
AC125V	5		1.5	0.7	3		2	1
AC250V	5		1	0.55	3		1.5	0.8
DC12V	5		3		4		3	
DC24V	5		3		4		3	
DC125V	0.4	0.2	-		-		-	
DC250V	0.4	0.2	-		-		-	

浪涌电流 Surge current	NC	24A 以下 (under)
	NO	12A 以下 (under)

注：1、电感性负载：功率因素 =0.4: 时间常数 =7msec。
2、灯泡负载之突入电流为稳定状态电流之 10 倍。
3、马达负载之突入电流为稳定状态电流之 6 倍。
4、带弹簧系列产品，操作体的使用范围为从弹簧的前端到弹簧全长的 1/3 以内。

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
3. while motor load has an inrush current of 6 times the steady-state current.
4. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

特性 Characteristics

防护等级 Degree of protection	IP65
容许操作速度 Allowable operating speed	5mm/s~0.5m/s
容许操作频率 Allowable operating frequency	电气 : 30 次 / 分 Electical: 30 operations/minute
接触电阻 Contact resistance	25mΩ 以下 (初期) 25mΩ max. (initial value)
绝缘电阻 Insulation resistance	100MΩ 以上 (在 500VDC) 100MΩ min. (at 500VDC)
绝缘强度 Insulation strength	AC1000V，50/60Hz，1 分钟，同极端子间 AC1000V, 50/60Hz, 1 minutes, homopolar between terminals
	AC1500V，50/60Hz，1 分钟，在带电金属部件和接地之间 AC1500V, 50/60Hz, 1 minutes, between the charged metal parts and the ground
	AC1500V，50/60Hz，1 分钟，在每个端子和非带电金属部件之间 AC1500V, 50/60Hz, 1 minutes, between each terminal and non charged metal parts
额定频率 Rated frequency	50/60Hz
耐振动 Vibration / 误动作 Misoperation	10 至 55Hz, 双振幅 1.5mm 10-55Hz, 1.5mm double amplitude
耐冲击 Shock	毁坏 :1,000m/S² 以下，误动作 : 最大 300m/S² Misoperation: Less than 1, 000m/S2, Malfunction: 300m/S2
使用环境温度 Ambient Temp	-5℃ ~+65℃ (没有结冰 With no icing)
使用环境湿度 Ambient humidity	35%~95%RH
电气寿命 Electrical life	500000 次以上 Above 500000
重量 Weight	约 130~190g About 130~190g

动作特性 Operating Characteristics

动作特性	型号 Model	HL-5000	HL-5030	HL-5050	HL-5391	HL-5100	5200,5220	5300,5330,5381
动作力	OF 最大 (Max)	7.35N	7.35N	7.35N	7.35N	8.83N	8.83N	1.47N
回复力	RF 最小 (Min)	0.98N	0.98N	0.98N	0.98N	1.47N	1.47N	—
预行程	PT 最大 (Max)	20°	20°	20°	20°	1.5mm	1.5mm	30mm
过行程	OT 最小 (Min)	50°	50°	50°	50°	4mm	4mm	—
应差距离	MD 最大 (Max)	12°	12°	12°	12°	1mm	1mm	—
动作位置	OP	—	—	—	—	30±0.8mm	40±0.8mm	—

	HL-5030	HL-5050
OF	3.09N	1.60N
RF	0.41N	0.22N

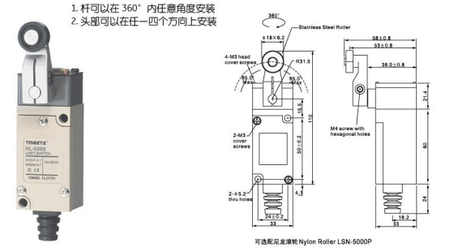
OF 和 RF 在臂长为 75mm(对于 5030) 以及 145mm(对于 5050，参考值) 时测得

注：使用臂长或杆长为 31.5mm 的类型测得。

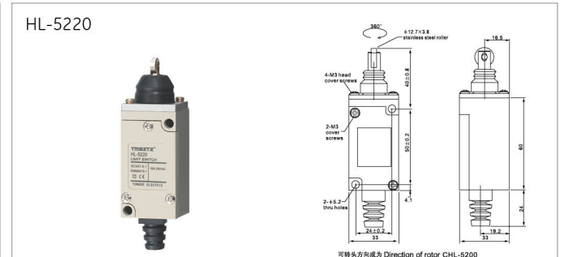
TMAZTZ® 永得工控开关

外观和尺寸 Appearance and Dimension

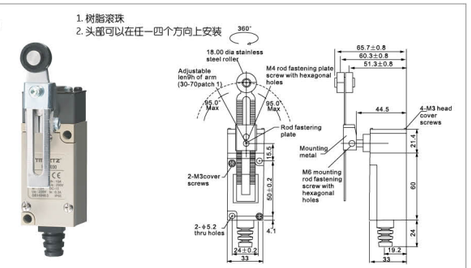
HL-5000



HL-5220



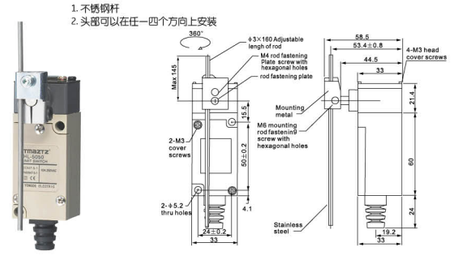
HL-5030



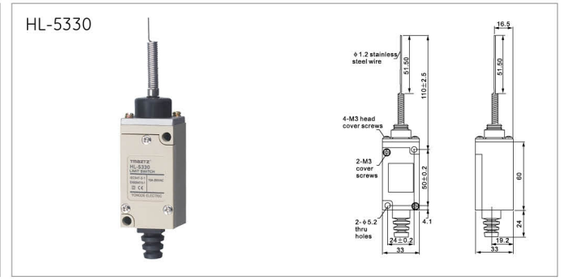
HL-5300



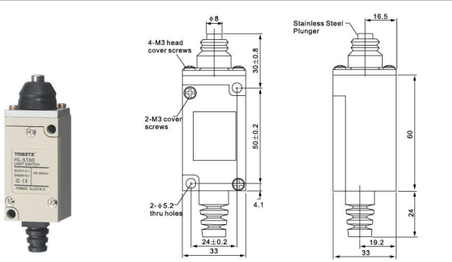
HL-5050



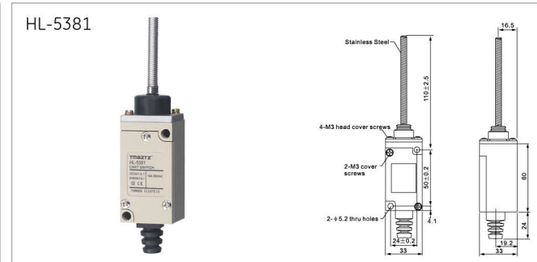
HL-5330



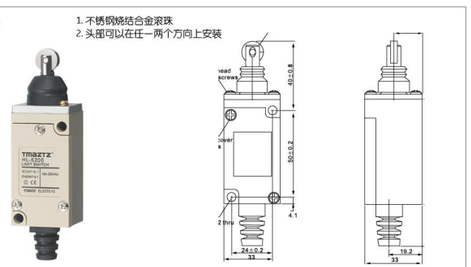
HL-5100



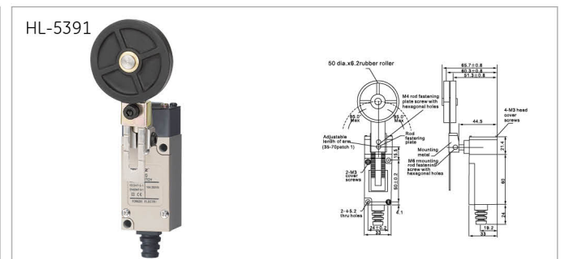
HL-5381



HL-5200



HL-5391



TZ-6 密封式限位开关 Sealed Limit Switch

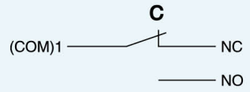
TMAZTZ® 永得工控开关

特征 Features

- ◎ TM 一般型基础开关内置到 TZ-6 开关中。它们提供了高断路容量和高耐用性。
- ◎ 带磁吹的 X 基础开关内置到 TZ-6 开关中。该系列还增加了 DC 型号。
- ◎ 保护盖取下后，内藏开关的端子在正面，易于连接。带接地端子的开关具有 CE 标志。
- ◎ 导管连接器尺寸标配 M20 × 1.5

- ◎ TM General-purpose Basic Switches are built into TZ-6 Switches. They provided high durability and high breaking capacity.
- ◎ X Basic Switches with magnetic blowout are built into TZ-6 Switches. DC models have also been added to the series.
- ◎ Terminals face the front when the cover is removed for easy connection. Switches with ground terminals have CE marking.
- ◎ M20x1.5 cable gland that can be equipped

接触形式 Contact form





额定值 Ratings

型号 Model	额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
		电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		电动机负载 Motor Load	
		NC	NO	NC	NO	NC	NO	NC	NO
TZ-□	AC125V	15		3	1.5	15		5	2.5
	AC250V	15		2.5	1.24	15		3	1.5
	AC480V	10		1.5	0.75	6		1.5	0.75
	DC125V	0.5		0.5		0.05		0.05	
	DC250V	0.25		0.25		0.03		0.03	
TX-□	DC8V	10		3	1.5	10	10	5	2.5
	DC14V	10		3	1.5	10	10	5	2.5
	DC30V	10		3	1.5	10	10	5	2.5
	DC125V	10		3	1.5	7.5	6	2	2.5
	DC250V	3		1.5	0.75	2	1.5	2	1.5

浪涌电流 Surge current		
	NC	30A 以下 (under)
	NO	15A 以下 (under)

注：1、左面数值表示标准电流
2、所谓感性负载，是指功率因数 0.4 以上 (AC)、时间常数 7ms 以下 (DC) 时的负载。
3、所谓灯负载，就是有 10 倍的浪涌电流的负载。
4、所谓电动机负载，就是有 6 倍的浪涌电流负载。

NOTES: 1. The above figures are for standard currents.
2. Inductive loads have a power factor of 0.4 min.(AC) and a time constant of 7 ms max. (DC).
3. Lamp load has an inrush current of 10 timesthe steadystate current.
4. Motor load has an inrush current of 6 times thesteady-state current.

特性 Characteristics

防护等级 Degree of protection		IP65
容许操作速度 Allowable operating speed		柱塞类型：0.01mm/s~0.5m/s 摆杆类型：0.0mm/s~0.5m/s Plunger type:0.01mm/s~0.5m/s Lever type:0.0mm/s~0.5m/s
容许操作频率 Allowable operating frequency	电气 Electical	20 次 / 分钟 Electrical:20 operations/min.
额定频率 Rated frequency		50/60Hz
绝缘电阻 Insulation resistance		100MΩ 以下 (DC500V 时) 100MΩ above(at 500VDC)
接触电阻 Contact resistance		15mΩ 以下 (初期值) 15mΩ max. (initial value)
端子温度升高 Terminal temperature rise		50℃以下 Above 50℃
绝缘强度 Insulation strength	同极端子间 Between homopolar terminals	AC1,000V，50/60Hz，1 分钟 AC1,000V，50/60Hz，1 minute
	带电金属部与地线之间 Between live metal part and ground wire	AC2,000V，50/60Hz，1 分钟 AC2,000V，50/60Hz，1 minute
	各端子与不带电金属部之间 Between terminals and uncharged metal parts	AC2,000V，50/60Hz，1 分钟 AC2,000V，50/60Hz，1 minute
耐振动 Vibration	误动作 Misoperation	10~55Hz,1.5mm 双振幅 10 to 55Hz,1.5mm pairs swing
耐冲击 *3 Shock	毁坏 Misoperation	1,000m/s² 以下 1,000m/s²max.
	误动作 Misoperation	50m/s² 以下 50m/s²max.
使用环境温度 Ambient Temp		-10℃ ~+80℃ (无结冰) -10℃ ~+80℃ (No ice)
使用环境湿度 Ambient humidity		一般型：35%~85%RH 密封型：35%~95%RH Sealed type:35%~95%RH General type:35%~95%RH
重量 Weight		约 260~280g About 260~280g
电气寿命 Electrical life		500000 次以上 Above 500000

* 对于密封型为 IP65，对于一般型为 IP60
*The protect degree is IP65 for sealed type, IP60 for general type.

动作特性 Operating Characteristics

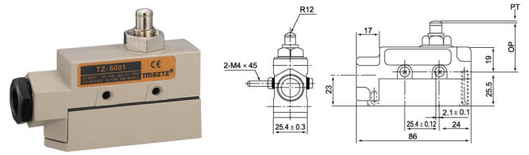
动作特性	型号 Model	TZ-6001	TZ-6002	TZ-6003	TZ-6004	TZ-6101	TZ-6102	TZ-6103	TZ-6104	TZ-6143
动作力	OF 最大 (Max)	2.45~3.43N	2.45~3.43N	2.45~3.43N	5.59N 以下	7.85N	4.90N	4.90N	6.28N	6.28N
回复力	RF 最小 (Min)	1.12N	1.12N	1.12N	1.67N	2.35N	0.98N	0.98N	2.26N	2.26N
预行程	PT 最大 (Max)	0.4mm	0.5mm	0.5mm	4mm	2mm	1mm	1mm	5mm	5mm
过行程	OT 最小 (Min)	5.5mm	3.6mm	3.6mm	6mm	5mm	3.5mm	3.5mm	6mm	6mm
应差距离	MD 最大 (Max)	0.05mm	0.05mm	0.05mm	0.47mm	0.1mm	0.12mm	0.12mm	0.4mm	0.4mm
动作位置	OP	38.2±0.8mm	49.7±1mm	49.7±1mm	—	45.8±1mm	49.7±0.8mm	49.7±0.8mm	—	—

TZ-6 密封式限位开关 Sealed Limit Switch

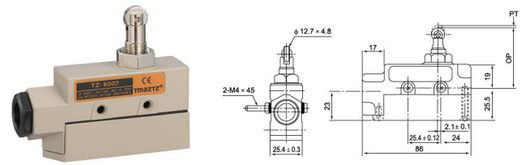
TMAZTZ® 永得工控开关

外观和尺寸 Appearance and Dimension

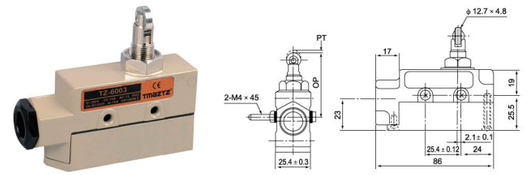
TZ-6001



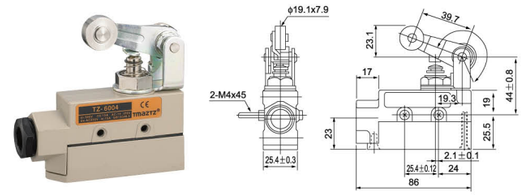
TZ-6002



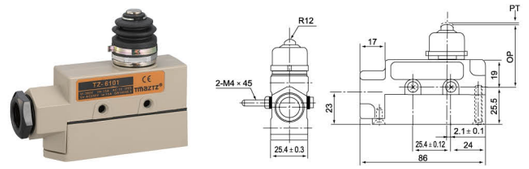
TZ-6003



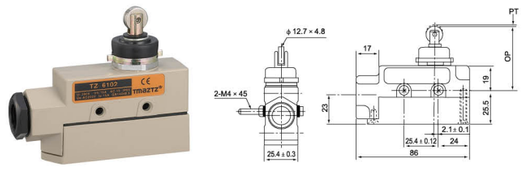
TZ-6004



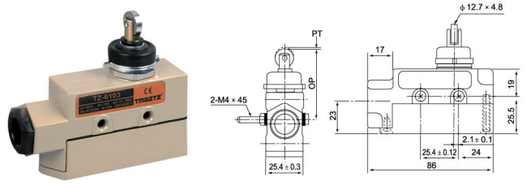
TZ-6101



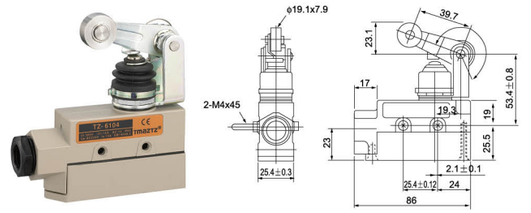
TZ-6102



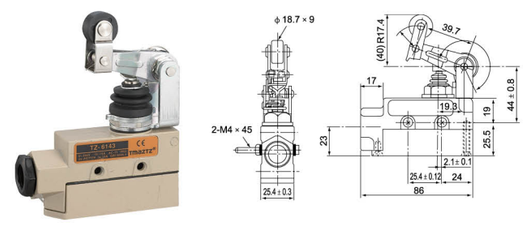
TZ-6103



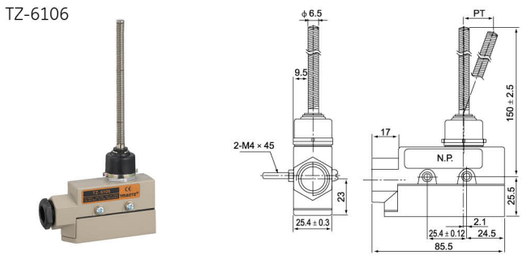
TZ-6104



TZ-6143



TZ-6106



TZ-3 防水限位开关 Waterproof Limit Switch

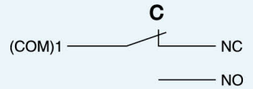
tmaztz® 永得工控开关

特征 Features

◎ 满足 IEC IP67 防护等级的高密封性。
◎ 三层密封构造：
柱塞部通过丁腈橡胶填料密封和隔膜密封，开关部通过丁腈橡胶帽密封；电缆入口通过包封材料密封。
◎ 标准型提供 3 和 5m 的电缆长度。
◎ 带柱塞的开关可实现并联安装。

◎ Sealing characteristics that meet IEC IP67 degree of protection.
◎ Triple-sealed construction:
Plunger section sealed via nitrile rubber packing seal and diaphragm; switch section sealed via nitrile rubber cap; cable entrance sealed via encapsulating material.
◎ Cable lengths of 3 and 5 m available on standard models.
◎ Multiple mounting possible with Switches with Plungers.

接触形式 Contact form





额定值 Ratings

额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC 250VAC	5 (0.1) 3		1.5 1	0.7 0.5	3 2		2.5 1.5	1.3 0.8
8VDC 14VDC 30VDC 125VDC 250VDC	5 (0.1) 5 (0.1) 4 (0.1) 0.4 0.2		2 2 2 0.05 0.03		5 4 3 0.4 0.2	4 4 3 0.4 0.2	3 3 3 0.05 0.03	

浪涌电流 Surge current		
	NC	20A 以下 (under)
	NO	10A 以下 (under)

特性 Characteristics

额定值 Rating	5A 125V,3A 250VAC
操作速度 Operating speed	1mm~1m/s
动作频率 Operating frequency	电气 : 30 次 / 分 Electrical:30 operations/min.
接点电阻 Contact resistance	15mΩ 以下 15mΩ max.(initial)
绝缘电阻 Inslation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min.(at 500VDC)
电介强度 Dielectric strength	不连续端子间 : 1000VAC, 50/60Hz, 持续 1 分钟 1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	端子和接地之间 : 1500VAC, 50/60Hz, 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	端子和无载电流金属零件之间 :1500VAC, 50/60Hz, 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between each terminal and ground
振动 Vibration Frequency	误动作耐久 : 10-55Hz, 1.5mm 双振幅 10 to 55HZ,1.5mm double amplitude
冲击 Shock	机械耐久 : 1000m/s² 以上 (约 100G 以上) 误动作耐久 : 500m/s² 以上 (约 50G 以上) Mechanical:Approx.1000m/s² (Appprox.100G' S) Electrical:Approx.500m/s² (Approx.50G' S)
使用温度 Ambienttemperature	-10℃ ~+70 ℃ (没有结冰 With no icing)
湿度 Humidity	< 95% RH
重量 Weight	约 360g(电缆线长 3m) 约 540g(电缆线长 5m) (TZ-3102) Approx.360g(cable length 3m) Approx.540g(cable length 5m)
防水等级 IP Degree	IP67
电气寿命 Electrical life	200000 次以上 Above 200000

动作特性 Operating Characteristics

动作特性	型号 Model	TZ-3101	TZ-3102	TZ-3103	3104,3107,3108	TZ-3111	TZ-3112	TZ-3113	TZ-3166,3169
动作力	OF 最大 (Max)	11.77N	11.77N	11.77N	5.69N	17.65N	17.65N	17.65N	1.47N
回复力	RF 最小 (Min)	4.41N	4.41N	4.41N	1.47N	4.41N	4.41N	4.41N	—
预行程	PT 最大 (Max)	1.8mm	1.8mm	1.8mm	15°	1.8mm	1.8mm	1.8mm	15°
过行程	OT 最小 (Min)	3mm	3mm	3mm	40°	3mm	3mm	3mm	—
应差距离	MD 最大 (Max)	0.2mm	0.2mm	0.2mm	3°	0.2mm	0.2mm	0.2mm	—
动作位置	OP	15.7±1mm	28.5±1mm	28.5±1mm	—	24.9±1mm(5) mm	34.3±1mm(5) mm	34.3±1mm(5) mm	—

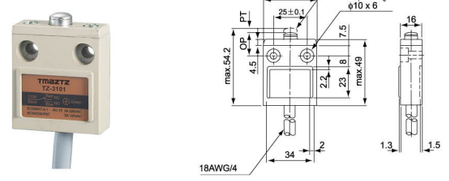
注：3104 的动作特性用于长度 38mm 的摆杆。 NOTE: 3104 the action characteristic of the swing rod for length 38mm.

TZ-3 防水限位开关 Waterproof Limit Switch

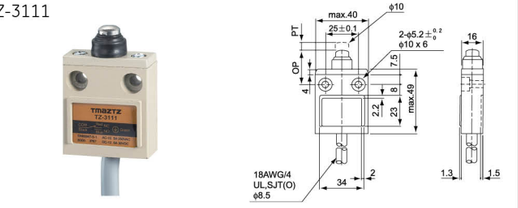
tmaztz® 永得工控开关

外观和尺寸 Appearance and Dimension

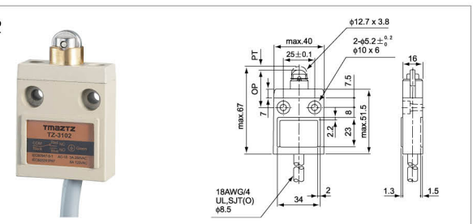
TZ-3101



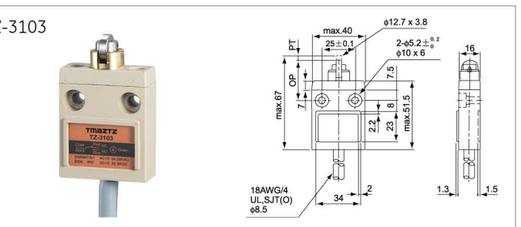
TZ-3111



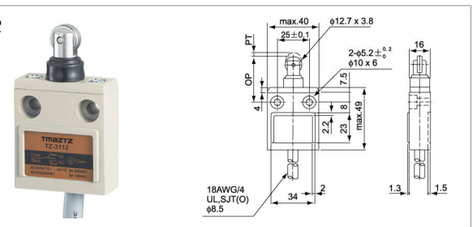
TZ-3102



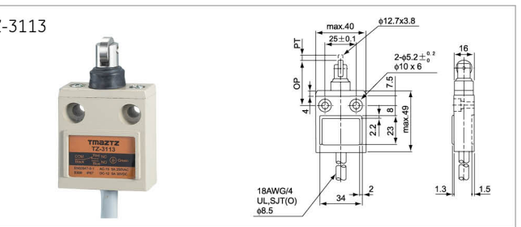
TZ-3103



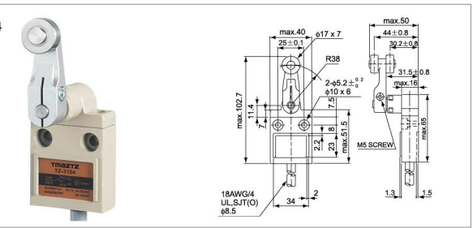
TZ-3112



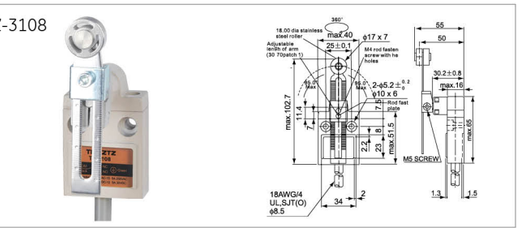
TZ-3113



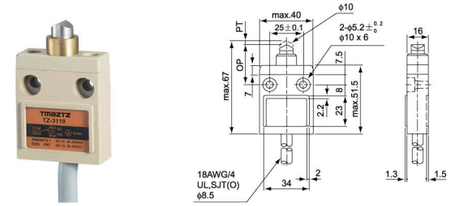
TZ-3104



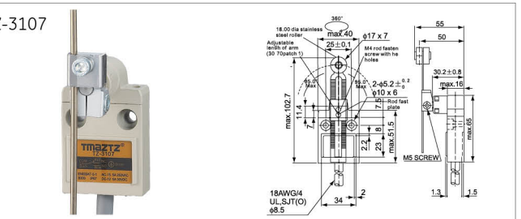
TZ-3108



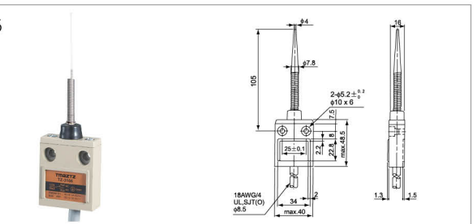
TZ-3110



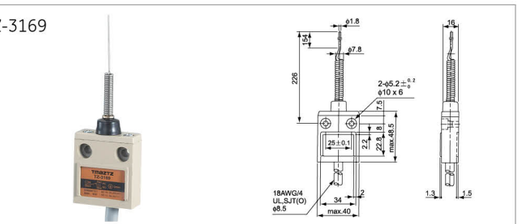
TZ-3107



TZ-3166



TZ-3169

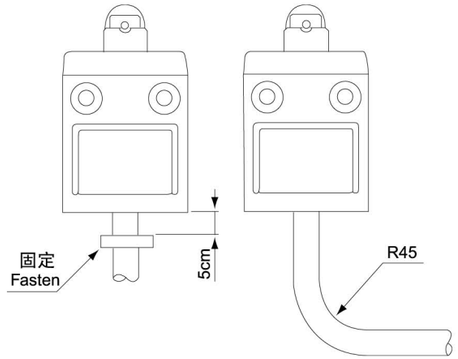


TZ-3 防水限位开关 Waterproof Limit Switch

配线注意事项 Fastening Of The Switch Cable

配线需注意于离开关 5cm 处须加以固定，而电线之弯曲半径不得小于 R45cm，注意勿伤及电线绝缘体，以避免电线漏电等情形。

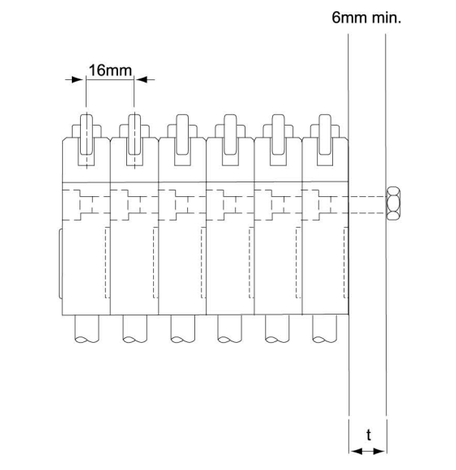
The switch bodies are filled with resin for sealing purposes. To avoid stressing the cable and switch body, fasten the switch at 5 cm or farther away from the switch body, should the wire be bent, the bending radius shall be at least 45mm.



多连接使用的场合 Switch Bank Mounting

需连接多组使用的场合时，最多可连接 6 组开关，连接时，开关表面之凹凸槽相互配合，另板厚 t 之尺寸应在 6mm 以上为适当。

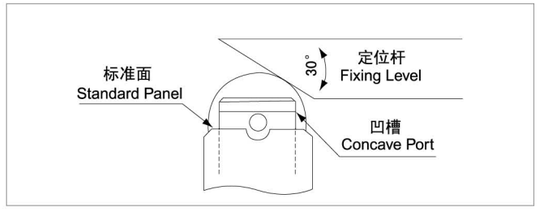
A maximum of six switches may be mounted together as a switch bank.During the installation,the convex part of the switch back.The mounting panel shall be 6mm or thicker.



安装注意事项 Installation

凸轮与定位杆等形状，频率及动作后移动等，将会影响使用寿命与精准度，因此建议定位杆之角度约 30°，而定位杆之表面粗糙度，以上，硬度 HV400-500，在设定开关之行程时，凹沟必须高于标准面之上为最适当之位置。

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, the hardness is from HV400~500.When installing, the position of the concave part should be above the standard panel



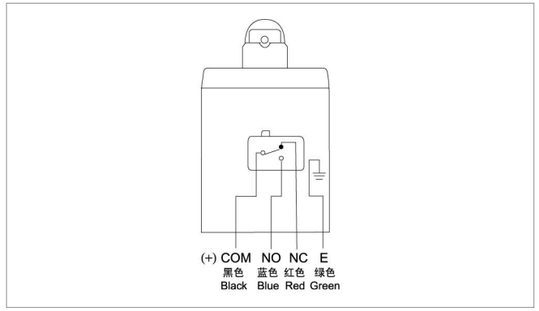
安装注意事项 Mounting

请依下表所示选择最适当之旋转扭力，施行锁紧作业，以避免伤害开关本体。

Recommended tightening torque according to the follwing form.

编号 Model	螺丝尺寸 Screw type	最适当之旋转扭力 Torque
1	M5 六角孔螺栓之固定螺丝 M5 fastening screws	43.4~52lb.in (50~60kgf.cm)
2	头部 M3.5 之安装螺丝 M3.5 installing screws	6.9~7.9lb.in (8~9kgf.cm)

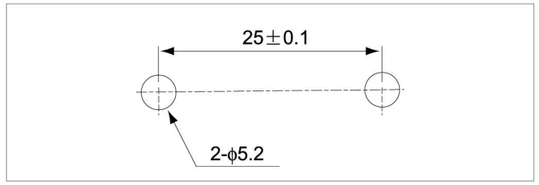
接点型式 Contact Types



装配孔之尺寸 Mounting Holes

安装板发生翘曲或凸起之状态，会造成安装上之不良，安装板请经筛选确认后，再予以使用。

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



T4N 小型安全限位开关 Miniature Safety Limit Switch

特征 Features

- 强制断开动作装置 (仅 NC 接点)，可以在发生像接点熔断等故障时断开接点。
- 标准的镀金接点保证了接触的高可靠性，可用于标准负载及微小负载。
- 强化了顶部密封结构，以提高密封性能。
- 内藏接点座具有速动型 : 1NC/1NO、2NC；慢动型 : 1NC/1NO、2NC
- Forced open action device(NC contacts only), it can disconnect the contact when the contact has fusing and other failures.
- Standardized gold-clad contacts provide high contact reliability, Can be used with both standard loads and microloads.
- Strengthened top seal structure improves the sealing performance.
- Built-in contact holder has fast-action type: 1NC/1NO; Slow-action: 1NC /1NO and 2NC



特性 Characteristics

保护等级 *1 Protection level*1		IP66
寿命 *2Life*2	电气 Electrical	50 万次以上 (AC250V 3A、电阻负载)*3 More than 500,000 times (AC250V 3A, resistive load) *3 30 万次以上 (AC250V 10A、电阻负载) More than 300,000 times (AC250V 10A, resistive load)
操作速度 Operating speed		1 ～ 500mm/s(T4N-1120)
操作频率 Operating frequency		最大 30 次 /min Max. 30 times/min
接触电阻 Contact resistance		25mΩ 以下 25 mΩ or less
最小使用负载 *4 Minimum working load *4		DC5V 1mA 电阻负载 (N 标准参考值) 1mA resistive load below DC5V (N standard reference value)
额定绝缘电压 (UI) Rated insulation voltage (Ui)		300V
防触电保护等级 Electric shock proof protection grade		Class II (双重绝缘) Class II (double insulated)
污染度 (使用环境)Pollution degree (environmental conditions)		污染度 3(EN60947-5-1) Pollution degree 3 (EN60947-5-1)
耐电压 Withstand voltage (EN60947-5-1)		同极端子间 : 2.5kV Between homopolar terminals: 2.5kV 异极端子间 : 4kV Between heteropolar terminals: 4kV 各端子和非充电金属部间 : 6kV Between terminals and uncharged metal parts: 6kV
绝缘电阻 Insulation resistance		100MΩ 以上 Above 100MΩ
接点间隙 Contact gap		最小 2 × 0.5mm 速动型、 最小 2 × 2mm 慢动型 Minimum 2 × 0.5mm quick-action type, Minimum 2 × 2mm slow-action type
振动 Vibration	误动作 Malfunction	10 ～ 55Hz 0.75mm 单振幅 10 ～ 55Hz 0.75mm single amplitude
冲击 Impact	耐久 Duration	1,000m/s^2
	误动作 Malfunction	300m/s^2
环境温度 Ambient temperature		-20 ～ +70℃ (无结冰、结露) -20 ～ +70℃ (No ice or dew)
环境湿度 Ambient humidity		95%RH 以下 Less than 95% RH
质量 Weight		约 73g(T4N-4120) About 73g (T4N-4120) 约 82g(配连接器) About 82g (With gland)

注 1. 上述值为初始值。
2. 一旦接点连接标准负载后，就不可用于连接更小容量的负载。否则可能导致接点表面粗糙，从而失去接触可靠性。
(1) 保护等级是根据 (EN60947-5-1) 规格的测试法得出的。使用前务必在实际使用的环境、条件下确认其密封性。开关盒本体具有防尘、防油构造，但应尽可能保持头部在没有碎屑粉尘、油污、化学品的场所进行使用。否则可能导致过早磨损、损坏或故障。
(2) 耐久性的条件是使用环境温度 5℃ ~ 35℃、使用环境湿度 40% ~ 70% RH。其他详细条件请另行查询。
(3) 使用环境温度为 35℃以上时，禁止使用 2 回路以上的 3A AC250V 负载。
(4) 这个值会因为开关频率、环境条件、可靠性等级等因素的影响而不同。请事先在实际负载上进行确认。

型号说明 Model Designations

T4N - ④ ① ② ③

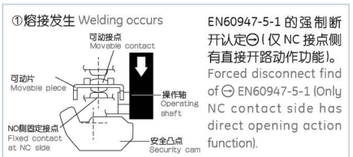
项目 Item	代号 Code	说明 Description
① 导管 / 连接器尺寸 Conduit / connector size	1	Pg13.5 (1 导管型) Pg13.5 (1 conduit type)
	2	G1/2 (1 导管型) G1/2 (1 conduit type)
	4	M20 (1 导管型) M20 (1 conduit type)*
	5	Pg13.5 (2 导管型) Pg13.5 (2 conduits type)
	6	G1/2 (2 导管型) G1/2 (2 conduits type)
	8	M20 (2 导管型) M20 (2 conduits type)
② 内藏开关 Built-in switch	1	1NC/1NO (速动型) 1NC/1NO (quick-action type)
	2	2NC (速动型) 2NC (quick-action type)
	A	1NC/1NO (慢动型) 1NC/1NO (slow-action type)
	B	2NC (慢动型) 2NC (slow-action type)
③头部及传动杆 Head and driving rod	20	滚珠摆杆型 (树脂摆杆，树脂滚珠) Roller lever (resin lever, resin ball)
	22	滚珠摆杆型 (金属摆杆，树脂滚珠) Roller lever (metal lever, resin ball)
	25	滚珠摆杆型 (金属摆杆，金属滚珠) Roller lever (metal lever, metal resin ball)
	2G	可调滚珠摆杆，Form Lock (金属摆杆，树脂滚珠) Adjustable roller lever, Form Lock (metal lever, resin ball)
	2H	可调滚珠摆杆，Form Lock (金属摆杆，橡胶滚珠) Adjustable roller lever, Form Lock (metal lever, rubber ball)
	2M	可调滚珠摆杆，Form Lock (金属摆杆，金属滚珠) Adjustable roller lever, Form Lock (metal lever, metal resin ball)
	31	顶部柱塞型 Top plunger type
	32	顶部柱塞滚珠型 Top plunger ball type
	62	单侧悬臂滚珠型 (水平) Unilateral cantilever ball type (horizontal)
	72	单侧悬臂滚珠型 (垂直) Unilateral cantilever ball type (vertical)
	80	触须型 Whisker type
	87	塑料棒型 Plastic stick type

* 导管连接器尺寸标配 M20 × 1.5 M20x1.5 cable gland that can be equipped

Note 1. The above values are initial values.
2. Once the contact is connected to a standard load, it can not be used to connect a smaller load. If so, the contact may result in rough surface, thus losing contact reliability.
(1) The protection level is gotten based on test method of (EN60947-5-1). Please make sure its sealing under actual environmental conditions before use. The switch box has dust and oil resistance structure, but it should be used in places without dust, oil and chemicals. Otherwise it may lead to premature wear, damage or malfunction.
(2) The durability is for ambient temperature of 5℃ ~ 35℃ and humidity of 40% to 70% RH. For additional details, please contact us.
(3) When the ambient temperature is above 35℃ , more than 2 circuits 3A 250VAC loads are prohibited.
(4) The values will vary with different switching frequency, environmental conditions, reliability level and other factors. Please confirm on the actual load in advance.

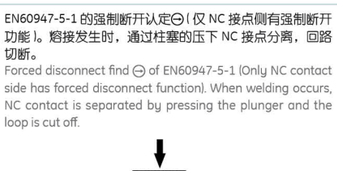
强制断开构造 Forced disconnect structure

1NC、1NO 接点 (速动型)
1NC and 1NO contacts (quick-action type)



EN60947-5-1 的强制断开认定⊖(仅 NC 接点侧有直接开路动作功能)。
Forced disconnect find of ⊖ EN60947-5-1 (Only NC contact side has direct opening action function).

1NC、1NO 接点 (慢动型)
1NC and 1NO contacts (slow-action type)



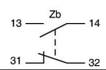
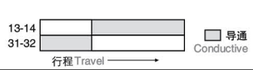
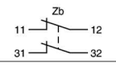
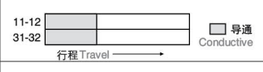
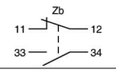
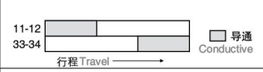
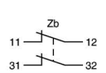
EN60947-5-1 的强制断开认定⊖(仅 NC 接点侧有强制断开功能)。熔接发生时，通过柱塞的压下 NC 接点分离，回路切断。
Forced disconnect find ⊖ of EN60947-5-1 (Only NC contact side has forced disconnect function). When welding occurs, NC contact is separated by pressing the plunger and the loop is cut off.

2NC 接点 (慢动型)
2NC contacts (slow-action type)



EN60947-5-1 的强制断开认定⊖(仅 NC 接点侧有强制断开功能)。
Forced disconnect find ⊖ of EN60947-5-1 (Only NC contact side has forced disconnect function).

接点形式 Contact form

型号 Model	接点 Contact	接点形式 Contact form	动作模式 Operation mode	说明 Explanation
T4N- □ 1 □	1NC/1NO (速动型) 1NC/1NO (Quick-action type)			仅 NC 接点 (31-32) 具有强制断开功能 (⊖)。 Only NC contact (31-32) has forced disconnect function (⊖) 接点 (13-14) 和 (31-32) 可作异极使用。 Contacts (13-14) and (31-32) can be used as heteropoles.
T4N- □ 2 □	2NC (速动型) 2NC (Quick-action type)			仅 NC 接点 (11-12、31-32) 具有强制断开功能 (⊖)。 Only NC contact (11-12、31-32) has forced disconnect function (⊖) 接点 (11-12) 和 (31-32) 可作异极使用。 Contacts (11-12) and (31-32) can be used as heteropoles.
T4N- □ A □	1NC/1NO (慢动型) 1NC/1NO (Slow-action type)			仅 NC 接点 (11-12) 具有强制断开功能 (⊖)。 Only NC contact (11-12) has forced disconnect function (⊖) 接点 (11-12) 和 (33-34) 可作异极使用。 Contacts (11-12) and (33-34) can be used as heteropoles.
T4N- □ B □	2NC (慢动型) 2NC (Slow-action type)			仅 NC 接点 (11-12、31-32) 具有强制断开功能 (⊖)。 Only NC contact (11-12、31-32) has forced disconnect function (⊖) 接点 (11-12) 和 (31-32) 可作异极使用。 Contacts (11-12) and (31-32) can be used as heteropoles.

动作特性 Action characteristics

速动型 (1NC/1NO)(2NC)、慢动型 (2NC)
Quick-action type (1NC/1NO)(2NC), slow-action type (2NC)

动作特性 Action characteristics		型号 Model	T4N- □ 120 T4N- □ 220 T4N- □ B20	T4N- □ 122 T4N- □ 222 T4N- □ B22	T4N- □ 125 T4N- □ 225 T4N- □ B25	T4N- □ 226 T4N- □ B26	T4N- □ 131 T4N- □ 231 T4N- □ B31	T4N- □ 132 T4N- □ 232 T4N- □ B32	T4N- □ 162 T4N- □ 262 T4N- □ B62	T4N- □ 172 T4N- □ 272 T4N- □ B72	T4N- □ 12H T4N- □ 22H T4N- □ B2H	T4N- □ 12G T4N- □ 12M T4N- □ 22G T4N- □ B2G*4	T4N- □□ 80	T4N- □□ 87
动作力 Action force	OF	最大 Max.	5.0N				6.5N	6.5N	5.0N	5.0N	4.5N		1.5N	1.5N
回复力 Restore force	RF	最小 Min.	0.5N				1.5N	1.5N	0.8N	0.8N	0.4N			
预行程 Pretravel	PT		18~27°				2mm	2mm	4mm	4mm	18 ～ 27°		15°	15°
过行程 Overtravel	OT	最小 Min.	40°				4mm	4mm	5mm	5mm	40°			
响应差的行程 Poor response travel	MD	最大 Max.*1	14°				1mm	1mm	1.5mm	1.5mm	14°			
动作位置 Action position	OP		——				18.2±0.5mm	28.6±0.8mm	37±0.8mm	27±0.8mm	——			
总行程 Total travel	TT	*2	(80°)				(6mm)	(6mm)	(9mm)	(9mm)	(80°)			
强制断开预行程 Forced disconnected pretravel	DOT	最小 Min.*3	50°				3.2mm	3.2mm	5.8mm	4.8mm	50°			
强制断开力 Forced disconnected force	DOF	最小 Min.*3	20N				20N	20N	20N	20N	20N			

注 2NC 接点的闭路·开路动作的同时性会有参差，使用时请注意确认。
(1) 仅限速动型。
(2) 为参考值。
(3) 仅限慢动型。为了安全使用，请确保所有值在最大或最小范围内。
(4) 为摆杆长度 32 mm 时的特性。

Note The simultaneity of ON / OFF operation of 2NC contacts have difference, please make sure before using it.
(1) Only for quick-action type.
(2) Reference values.
(3) Only for slow-action type. For safe use, please make sure that all values are within the range of maximum or minimum.
(4) The property value when length of lever is 32mm.

动作特性 Action characteristics

慢动型 (1NC/1NO)
Slow-action type (1NC/1NO)

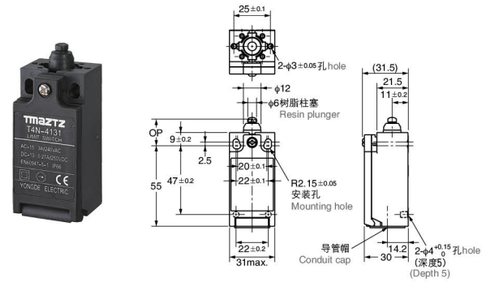
动作特性 Action characteristics		型号 Model	T4N- □ A20	T4N- □ A22	T4N- □ A25	T4N- □ A26	T4N- □ A31	T4N- □ A32	T4N- □ A62	T4N- □ A72	T4N- □ A2H	T4N- □ A2G*8
动作力 Action force	OF	最大 Max.	5.0N				6.5N	6.5N	5.0N	5.0N	4.5N	
回复力 Restore force	RF	最小 Min.	0.5N				1.5N	1.5N	0.8N	0.8N	0.4N	
预行程 Pretravel	PT	*1	18 ～ 27°				2mm	2mm	4mm	4mm	18 ～ 27°	
	PT	(2nd)*2	(44°)				(2.9mm)	(2.9mm)	(5.2mm)	(4.3mm)	(44°)	
	PT	*3	27.5 ～ 36.5°				2.8mm	2.8mm	4mm	4mm	27.5 ～ 36.5°	
	PT	(2nd)*4	(18°)				(1mm)	(1mm)	(1.5mm)	(1.5mm)	(18°)	
过行程 Overtravel	OT	最小 Min.	40°				4mm	4mm	5mm	5mm	40°	
动作位置 Action position	OP		——				18.2±0.5mm	28.6±0.8mm	37±0.8mm	27±0.8mm	——	
	OP	*5	——				17.4±0.5mm	28±0.8mm	36±0.8mm	26.1±0.8mm	——	
总行程 Total travel	TT	*6	(80°)				(6mm)	(6mm)	(9mm)	(9mm)	(80°)	
强制断开预行程 Forced disconnected pretravel	DOT	最小 Min.*7	50°				3.2mm	3.2mm	5.8mm	4.8mm	50°	
强制断开力 Forced disconnected force	DOF	最小 Min.*7	20N				20N	20N	20N	20N	20N	

(1) NC 接点呈开路。
(2) NO 接点呈闭路。
(3) 仅限 MBB 型。
(4) 为 MBB 型的参考值。
(5) 仅限 MBB 型。
(6) 为参考值。
(7) 为了安全使用，请确保所有值在最大或最小范围内。
(8) 为摆杆长度 32 mm 时的特性。

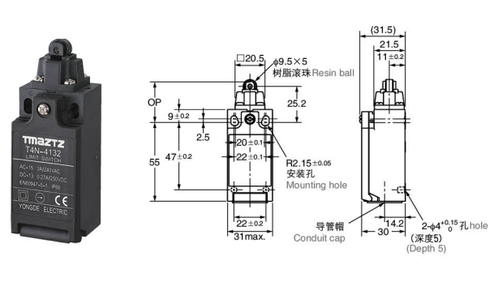
(1) NC contact is open.
(2) NO contact is closed.
(3) Only for MBB type.
(4) It is the reference value of MBB type.
(5) Only for MBB type.
(6) Reference values
(7) For safe use, please make sure that all values are within the range of maximum or minimum.
(8) The property value when length of lever is 32mm.

外观和尺寸 Appearance and Dimension

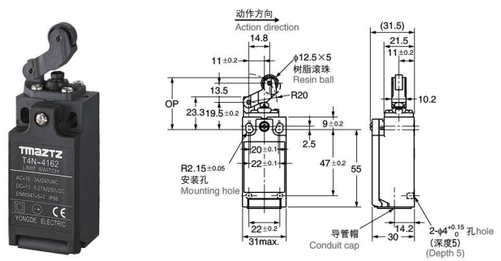
T4N-4131



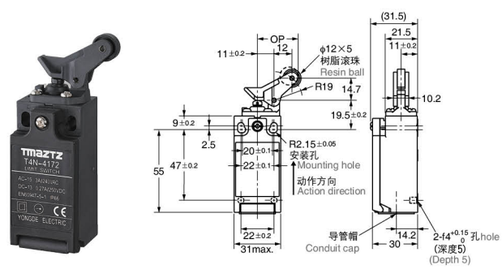
T4N-4132



T4N-4162

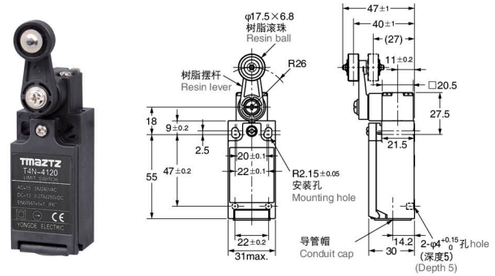


T4N-4172

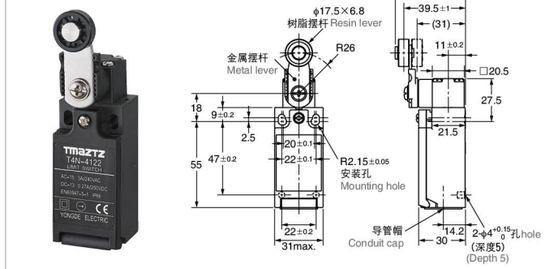


外观和尺寸 Appearance and Dimension

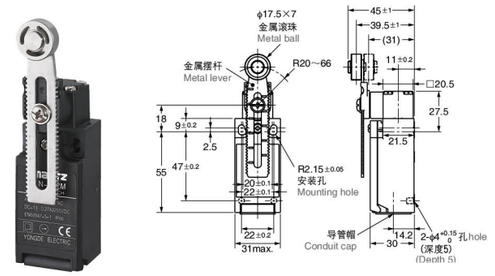
T4N-4120



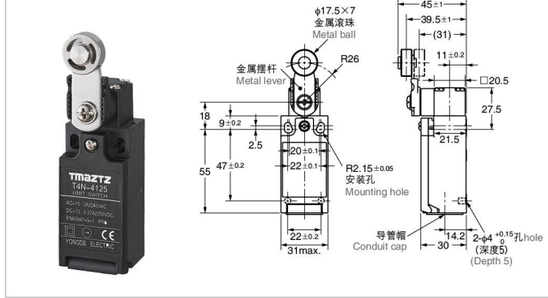
T4N-4122



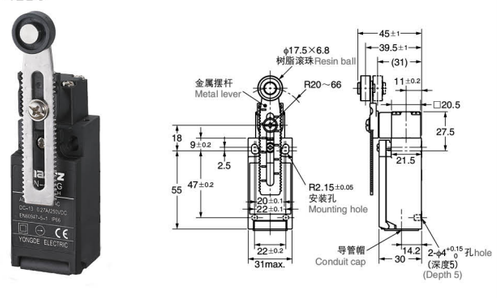
T4N-412M



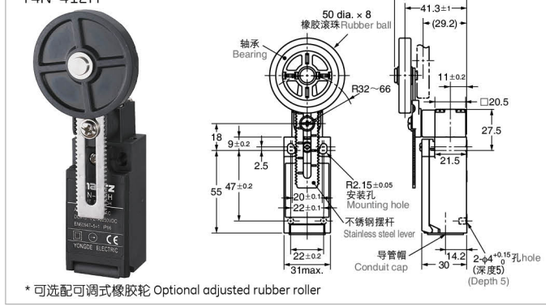
T4N-4125



T4N-412G

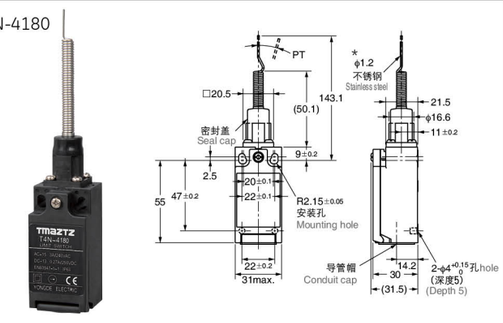


T4N-412H

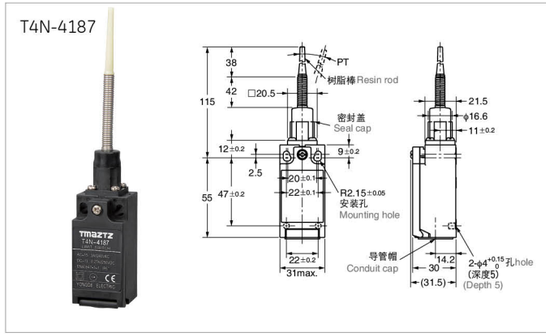


* 可选配可调式橡胶轮 Optional adjusted rubber roller

T4N-4180



T4N-4187



* 不锈钢垫圈和塑料棒的使用范围从前端 35mm 以内，整个动作在 70mm 以内

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

特征 Features

- 强制断开动作装置 (仅 NC 接点)，可以在发生像接点熔断等故障时断开接点。
- 标准的镀金接点保证了接触的高可靠性，可用于标准负载及微小负载。
- 接点形式 1NC/1NO 及 2NC(仅限慢动型)。
- Forced open action device(NC contacts only), it can disconnect the contact when the contact has fusing and other failures.
- Standardized gold-clad contacts provide high contact reliability, Can be used with both standard loads and microloads.
- Contact forms 1NC/1NO and 2NC (only slow type).



特性 Characteristics

保护等级 *1 Protection level*1		IP66
寿命 *4Life *4	电气 Electrical	50 万次以上 (AC250V 3A、电阻负载)*3 More than 500,000 times (AC250V 3A, resistive load) *3 30 万次以上 (AC250V 10A、电阻负载) More than 300,000 times (AC250V 10A, resistive load)
操作速度 Operating speed		1 ～ 500mm/s(T4N-1A20R)
操作频率 Operating frequency		最大 30 次 /min Max. 30 times/min
接触电阻 Contact resistance		25mΩ 以下 25 mΩ or less
最小使用负载 *4 Minimum working load *4		DC5V 1mA 电阻负载 (N 标准参考值) 1mA resistive load below DC5V (N standard reference value)
额定绝缘电压 (UI) Rated insulation voltage (Ui)		300V
防触电保护等级 Electric shock proof protection grade		Class Ⅱ (双重绝缘) Class II (double insulated)
污染度 (使用环境) Pollution degree (environmental conditions)		污染度 3(EN60947-5-1) Pollution degree 3 (EN60947-5-1)
耐电压 Withstand voltage (EN60947-5-1)		同极端子间 : 2.5kV Between homopolar terminals: 2.5kV
		异极端子间 : 4kV Between heteropolar terminals: 4kV
		各端子和非充电金属部间 : 6kV Between terminals and uncharged metal parts: 6kV
绝缘电阻 Insulation resistance		100MΩ 以上 Above 100MΩ
接点间隙 Contact gap		最小 2 × 0.5mm 速动型、 最小 2 × 2mm 慢动型 Minimum 2 × 0.5mm quick-action type, Minimum 2 × 2mm slow-action type
振动 Vibration	误动作 Malfunction	10 ～ 55Hz 0.75mm 单振幅 10 ～ 55Hz 0.75mm single amplitude
冲击 Impact	耐久 Duration	1,000m/s^2
	误动作 Malfunction	300m/s^2
环境温度 Ambient temperature		-20 ～ +70℃ (无结冰、结露) -20 ～ +70℃ (No ice or dew)
环境湿度 Ambient humidity		95%RH 以下 Less than 95% RH
重量 Weight		约 92g(T4N-4A20R) About 92g (T4N-4A20R) 约 100g(配连接器) About 100g (With gland)

注 1. 上述值为初始值。

2. 一旦接点连接标准负载后，就不可用于连接更小容量的负载。否则可能导致接点表面粗糙，从而失去接触可靠性。

(1) 保护等级是根据 (EN60947-5-1) 规格的测试法得出的。使用前务必在实际使用的环境、条件下确认其密封性。 开关盒本体具有防尘、防油构造，但应尽可能保持头部在没有碎屑粉尘、油污、化学品的场所进行使用。否则可能导致过早磨损、损坏或故障。

(2) 耐久性的条件是使用环境温度 5℃ ~ 35℃、使用环境湿度 40% ~ 70% RH。
其他详细条件请另行查询。

(3) 使用环境温度为 35℃以上时，禁止使用 2 回路以上的 3A AC250V 负载。

(4) 这个值会因为开关频率、环境条件、可靠性等级等因素的影响而不同。请事先在实际负载上进行确认。

型号说明 Model Designations

T4N — 4 A 3 1 R

① ② ③

项目 Item	代号 Code	说明 Description
① 导管 / 连接器尺寸 Conduit / connector size	1	Pg13.5 (1 导管型) Pg13.5 (1 conduit type)
	2	G1/2 (1 导管型) G1/2 (1 conduit type)
	4	M20 (1 导管型) M20 (1 conduit type)*
	6	G1/2 (2 导管型) G1/2 (2 conduits type)
	8	M20 (2 导管型) M20 (2 conduits type)
② 内藏开关 Built-in switch	A	1NC/1NO (慢动型) 1NC/1NO (slow-action type)
	B	2NC (慢动型) 2NC (slow-action type)
③头部及传动杆 Head and driving rod	20	滚珠摆杆型 (树脂摆杆 , 树脂滚珠) Roller lever (resin lever, resin ball)
	22	滚珠摆杆型 (金属摆杆 , 树脂滚珠) Roller lever (metal lever, resin ball)
	25	滚珠摆杆型 (金属摆杆 , 金属滚珠) Roller lever (metal lever, metal resin ball)
	2G	可调滚珠摆杆 , Form Lock (金属摆杆 , 树脂滚珠) Adjustable roller lever, Form Lock (metal lever, resin ball)
	2H	可调滚珠摆杆 , Form Lock (金属摆杆 , 橡胶滚珠) Adjustable roller lever, Form Lock (metal lever, rubber ball)
	2M	可调滚珠摆杆， Form Lock (金属摆杆 , 金属滚珠) Adjustable roller lever, Form Lock (metal lever, metal resin ball)
	31	顶部柱塞型 Top plunger type
	32	顶部柱塞滚珠型 Top plunger ball type
	62	单侧悬臂滚珠型 (水平) Unilateral cantilever ball type (horizontal)
	72	单侧悬臂滚珠型 (垂直) Unilateral cantilever ball type (vertical)

* 导管连接器尺寸标配 M20 × 1.5 M20x1.5 cable gland that can be equipped

Note 1. The above values are initial values.

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

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

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

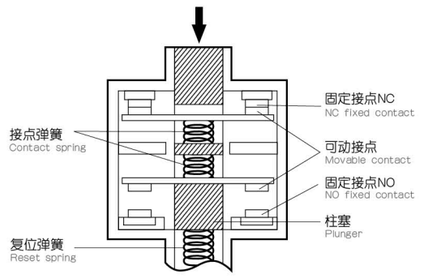
(3) When the ambient temperature is above 35℃ , more than 2 circuits 3A 250VAC loads are prohibited.

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

强制断开构造 Forced disconnect structure

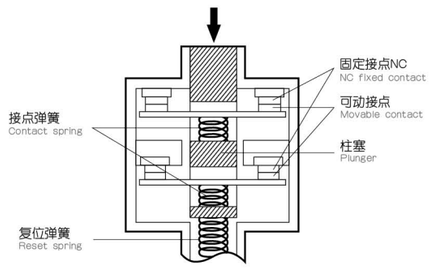
1NC、1NO 接点 (慢动型)
1NC and 1NO contacts (slow-action type)

仅限 NC 接点侧有强制断开构造。
当发生溶着时，通过按下柱塞，可以分离接点，切断回路。(符合 EN60947-5-1 强制断开操作)。
Only NC contact has forced disconnect structure.
When melting occurs, the contact can be isolated by pressing the plunger to cut off the loop. (In accordance with EN60947-5-1 force disconnect operation).



2NC 接点 (慢动型)
2NC contacts (slow-action type)

双侧 NC 接点均具有强制断开构造。
当发生溶着时，通过按下柱塞，可以分离接点，切断回路。(符合 EN60947-5-1 强制断开操作)。
When melting occurs, the contact can be isolated by pressing the plunger to cut off the loop. (In accordance with EN60947-5-1 force disconnect operation).



接点形式 Contact form

型号 Model	接点 Contact	接点形式 Contact form	动作模式 Operation mode	说明 Explanation
T4N- □A□R	1NC/1NO (慢动型) 1NC/1NO (Slow-action type)	Zb 11 — 12 33 — 34	11-12 33-34 导通 Conductive 行程Travel	仅 NC 接点 (11-12) 具有强制断开功能 (⊖)。 Only NC contact (11-12) has forced disconnect function (⊖) 接点 (11-12) 和 (33-34) 可作异极使用。 Contacts (11-12) and (33-34) can be used as heteropoles.
T4N- □B□R	2NC (慢动型) 2NC (Slow-action type)	Zb 11 — 12 31 — 32	11-12 31-32 导通 Conductive 行程Travel	仅 NC 接点 (11-12、31-32) 具有强制断开功能 (⊖)。 Only NC contact (11-12、31-32) has forced disconnect function (⊖) 接点 (11-12) 和 (31-32) 可作异极使用。 Contacts (11-12) and (31-32) can be used as heteropoles.

动作特性 Action characteristics

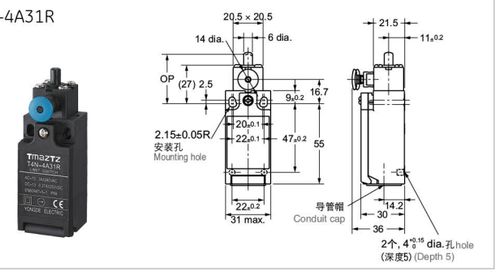
动作特性 Action characteristics		型号 Model	T4N-□□ 20R	T4N-□□ 22R	T4N-□□ 2GR *2	T4N-□□ 2HR	T4N-□□ 31R	T4N-□□ 32R	T4N-□□ 62R	T4N-□□ 72R
锁定力	LF	最大 Max.	6.45N	6.45N	5.6N	5.4N	10.8N	10.8N	7.5	7.9N
锁定行程	LT	最大 Max.	55°	55°	55°	55°	4.5mm	4.5mm	7mm	7mm
预行程	PT1	*3	18~27°	18~27°	18~27°	18~27°	2mm	2mm	4mm	4mm
预行程	PT2	*4	(44°)	(44°)	(44°)	(44°)	(2.9mm)	(2.9mm)	(5.2mm)	(4.3mm)
动作位置	OP		--	--	--	--	34±0.5mm	44.4±0.8mm	53±0.8mm	27±0.8mm
总行程	TT	*5	80°	80°	80°	80°	(6mm)	(6mm)	(9mm)	(9mm)
强制断开预行程	DOT	最小 Min. *6	50°	50°	50°	50°	3.2mm	3.2mm	5.8mm	5.8mm
强制断开力	DOF	最小 Min.* 6	20N		20N	20N	20N	20N	20N	20N

注 . (1) 2NC 接点的闭路 / 开路动作的同时性有所参差，使用时请务必确认。
(2) 摆杆长 32mm 时的特性值。
(3) NC 接点为开路 (OFF) 状态时的 PT 值。
(4) NO 接点闭合 (ON) 时的 PT 一般值 (仅限 1NC/1NO 型)。
(5) 参考值。
(6) 强制断路构造的负载和行程值。为保证安全，请务必保持在规定的上限和下限范围内。

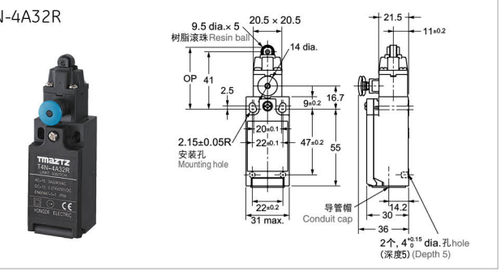
Note(1) The simultaneity of ON / OFF operation of 2NC contacts have difference, please make sure before using it.
(2) The property value when length of lever is 32mm.
(3) PT value when NC contact is at open (OFF) state.
(4) PT common value when NO contact is at close (ON) state (only for 1NC/1NO types).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

外观和尺寸 Appearance and Dimension

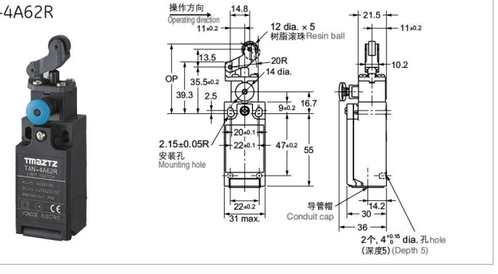
T4N-4A31R



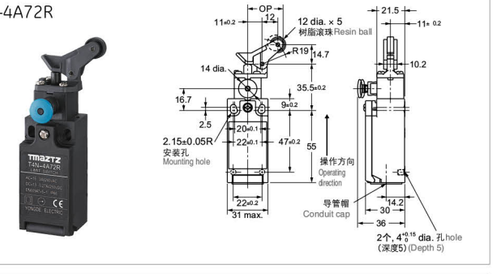
T4N-4A32R



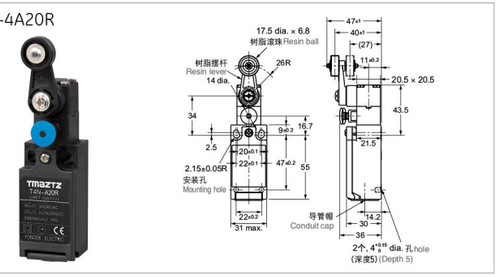
T4N-4A62R



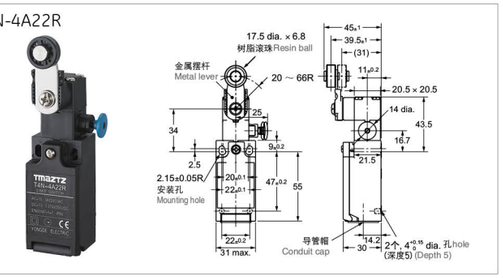
T4N-4A72R



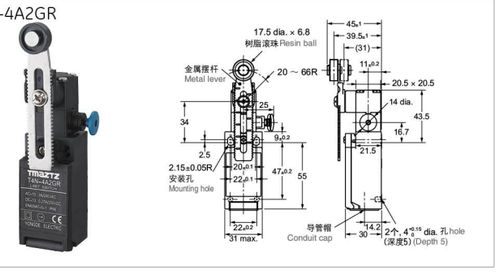
T4N-4A20R



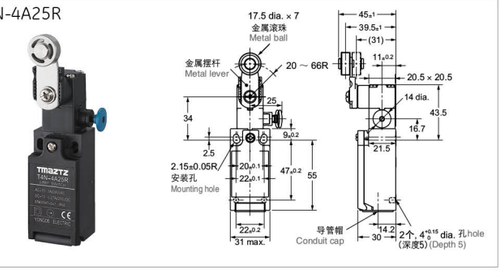
T4N-4A22R



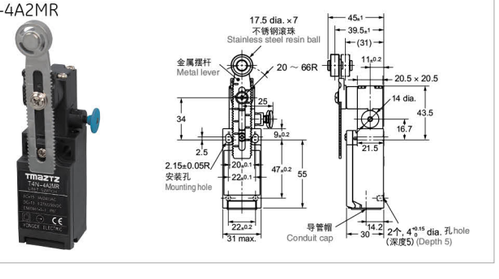
T4N-4A2GR



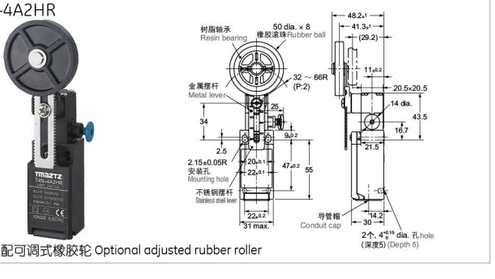
T4N-4A25R



T4N-4A2MR



T4N-4A2HR



* 可选配可调式橡胶轮 Optional adjusted rubber roller

型号说明 Model Designations

T4NS - □ □ □
① ② ③

项目 Item	代号 Code	说明 Description
① 导管 / 连接器尺寸 Conduit / connector size	1	Pg13.5 (1 导管) Pg13.5 (1 conduits type)
	2	G1/2 (1 导管) G1/2 (1 conduits type)
	4	M20 (1 导管) M20 (1 conduits type)
② 内置开关 Built-in switch	A	1NC/1NO (慢动型) 1NC/1NO (slow-action type)
	B	2NC (慢动型) 2NC (slow-action type)
③头部安装方向 Head Mounting Direction	F	四个安装方向可选 (交货时为前侧安装) / 塑料 Four mounting directions possible (Front-side mounting at shipping)/plastic
	D	四个安装方向可选 (交货时为前侧安装) / 金属 Four mounting directions possible (Front-side mounting at shipping)/metal

导管连接器尺寸标配 M20 × 1.5
M20x1.5 cable gland that can be equipped



特性 Characteristics

额定电流	Rating	3A 240VAC
操作速度	Operating speed	0.1m ~0.5m/s
动作频率	Operating frequency	30 次 / 分以下 30 operations/minute
接点电阻	Contact resistance	25mΩ 以下 25mΩ max. (initial).
绝缘电阻	Insulation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min. (at 500VDC)
绝缘电压	Rated insulation voltage(UI)	400V
电介强度	Dielectric strength	AC2500V/Umip 4KV
振动	Vibration	10 至 55HZ，1.5mm 双振幅
冲击	Shock	机械耐久 : 1000m/s² 以上 (约 100G 以上) 误动作耐久 : 300m/s² 以上 (约 30G 以上) Mechanical: Approx. 1000m/s² (Approx. 100G ' S) Electrical: Approx. 300m/s² (Approx. 30G ' S)
使用温度	Ambient temperature	-10℃ ~+70℃ (没有结冰 With no icing)
使用湿度	Ambient Humidity	< 95% RH
使用寿命	Life	电气 : 30 万次以上 Electrical: 300,000 operations/min.
重量	Weight	约 96g(T4N-4AF-K1) About 96g (T4N-4AF-K1) 约 104g(配连接器) About 104g (With gland)
防水等级	Degree of protection	IP66 初期值

额定值 Ratings

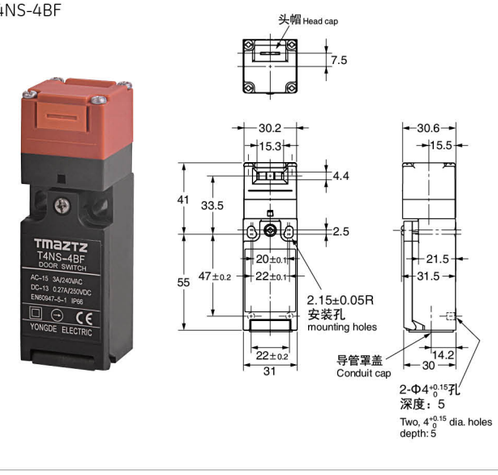
额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	5 (0.1)		1.5	0.7	3		2.5	1.3
250 VAC	3		1	0.5	2		1.5	0.8
8 VDC	5 (0.1)		2		5	4	3	
14 VDC	5 (0.1)		2		4	4	3	
30 VDC	4 (0.1)		2		3	3	3	
125 VDC	0.4		0.05		0.4	0.4	0.05	
250 VDC	0.2		0.03		0.2	0.2	0.03	

浪涌电流 Surge current		
	NC	20A 以下 (under)
	NO	10A 以下 (under)

动作特性 Operating Characteristics

操作插入力量	Key plug in force	最大 Max.	14.7N(1,500gf)
操作抽动力量	Key pull out force	最大 Max.	29.42N(3,000gf)
动作距离	Pretravel		6±3mm
总行程	Total travel		(28mm)
强制脱离力	Force required to have positive	最小 Min.	58.84N(6,000gf)
强制脱离距离	Positive opening travel	最小 Min.	10mm

T4NS-4AF
T4NS-4BF



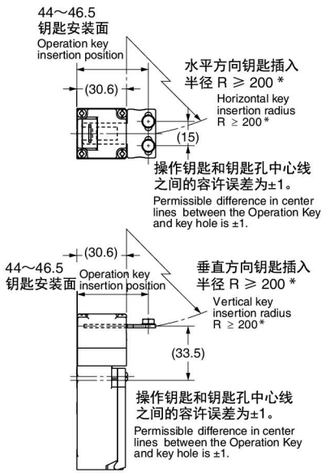
动作特性 Operating Characteristics

型号 Model	接点 Contact	接点形式 Contact form	动作模式 Operating pattern	备注 Remarks
T4NS- □ A □	1NC/NO	Zb 11 — 12 33 — 34	11-12 33-34 ON 行程 Stroke 操作钥匙插入完成位置 Operation Key insertion completion position 拔出完成位置 Extraction completion position	仅 NC 接点 (11-12) 拥有经认证的强制断开机制。 Only NC contacts 11-12 have a certified direct opening mechanism. 端子 (11-12) 和 (33-34) 能用作异名极。 The terminals 11-12 and 33-34 can be used as unlike poles.
T4NS- □ B □	2NC	Zb 11 — 12 31 — 32	11-12 31-32 ON 行程 Stroke 操作钥匙插入完成位置 Operation Key insertion completion position 拔出完成位置 Extraction completion position	仅 NC 接点 (11-12) 和 (31-32) 拥有经认证的强制断开机制。 NC contacts 11-12 and 31-32 have a certified direct opening mechanism. 端子 (11-12) 和 (31-32) 能用作异名极。 The terminals 11-12 and 31-32 can be used as unlike poles.

外观和尺寸 Appearance and Dimension

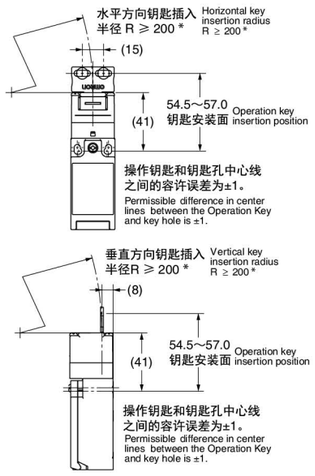
T4NS-4 □ F + T4NS-K1
(前侧安装操作钥匙时)





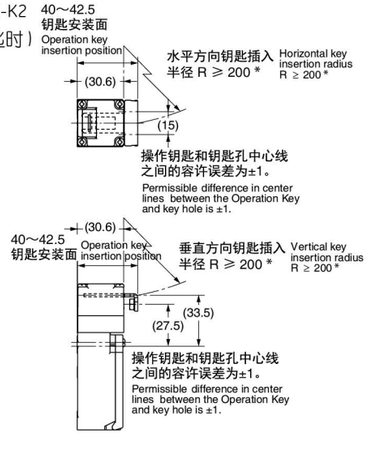
T4NS-4 □ F + T4NS-K1
(顶部安装操作钥匙时)





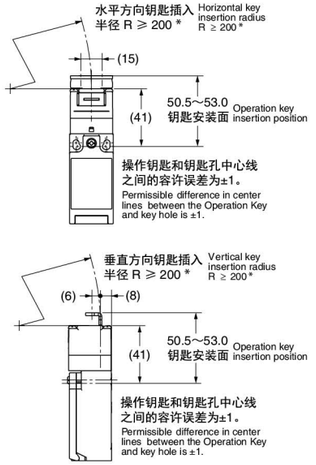
T4NS-4 □ F + T4NS-K2
(前侧安装操作钥匙时)





T4NS-4 □ F + T4NS-K2
(顶部安装操作钥匙时)





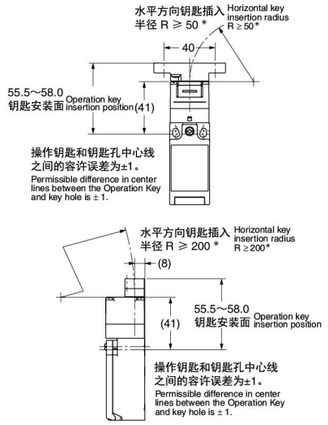
T4NS/T4NS-SK 安全门开关 Safety-door Switch

永得工控开关

外观和尺寸 Appearance and Dimension

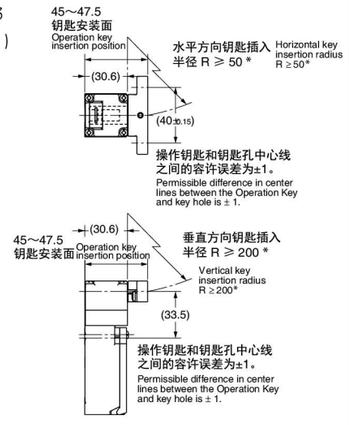
T4NS-4 □ F + T4NS-K3
（顶部安装操作钥匙时）





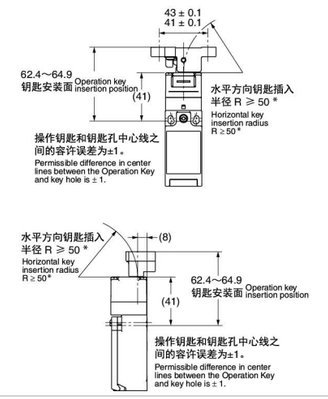
T4NS-4 □ F + T4NS-K3
（前侧安装操作钥匙时）





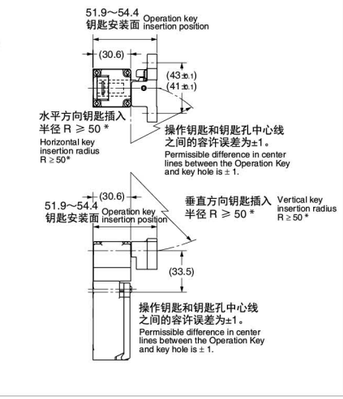
T4NS-4 □ F + T4NS-K5
（顶部安装操作钥匙时）





T4NS-4 □ F + T4NS-K5
（前侧安装操作钥匙时）

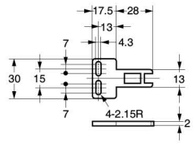




操作钥匙 Operating the key

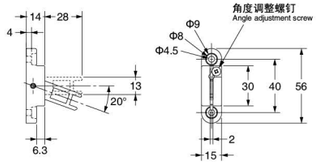
T4NS-K1





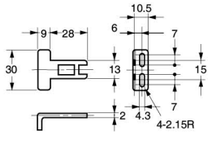
T4NS-K3





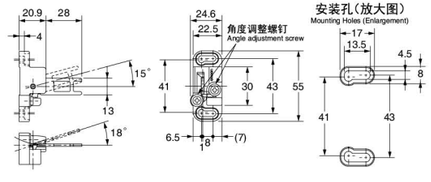
T4NS-K2





T4NS-K5





V15 微动开关 Micro Switch

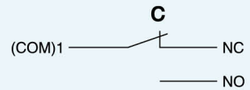
永得工控开关

特征 Features

- 动作位置精度高
- 抗冲击性好，最大 1000m/s2
- 高强度外壳，安装开关时，塑料外壳能承受 6kgf.cm 的扭矩而不会破裂。

- High accuracy of action position;
- Good shock resistance, maximum 1000m/s2;
- High-strength shell, when mounting, the plastic shell can withstand torsional moment of 6kgf.cm without break.

接触形式 Contact form





额定规格 Ratings

项目 Item / 规格 Spec.	额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)				突入电流 (A) Inrush Current	
		电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load			
		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
16A	250VAC	16		2		10		3		40 以下 max.	
	8VDC	16		4		10		6			
	30VDC	10		4		10		4			
	125VDC	0.6		0.1		0.6		0.1			
	250VDC	0.3		0.05		0.3		0.05			

型号说明 Model Designations

V - 15 □ - □ □ □

- 操动所需最大压力 Max pressure needed for operation
- 端子规格 (C2:#4.8 端子 (英制 #187)) C: #6.3 端子 (英制 250) Terminal specification (C2:#4.8 terminal (the British system #187)) C: #6.3 terminal (the British system 250)
- 触形式 Contact form
- 传动形式 Driving form
- 型号 Model

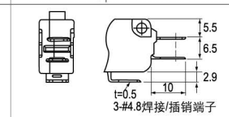
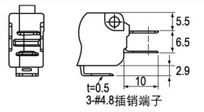
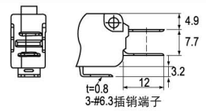
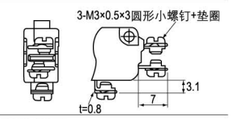
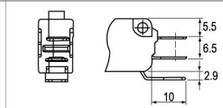
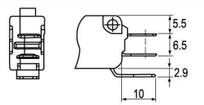
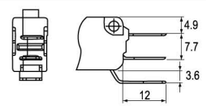
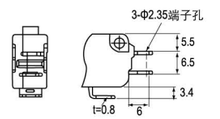
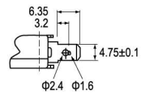
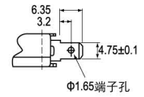
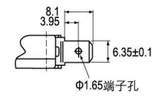
特性 Characteristics

操作速度 Operation speed		0.1mm~1m/s(按钮型 Button type)
动作频率 Operating frequency		电气：20 次 / 分 Electrical：20 operations/min
绝缘电阻 Insulation resistance		100MΩ 以上 (在 500VDC 以下) 100MΩ above(at 500VDC)
接点电阻 Contact resistance		15mΩ 以下 (初期) 15mΩ max. (initial value)
耐电压 Withstand voltage	非连续端子间 Non-continuous terminals	1,000VAC, 50/60Hz 持续 1 分钟 1000VAC, 50 / 60Hz for 1 minute
	载电流和无载电流零件间，端子和接地之间 current-carrying and non-current-carrying metal parts, Between terminal and earthing	2,000VAC, 50/60Hz 持续 1 分钟 2,000VAC, 50/60Hz for 1 minute
振动 Vibration	误动作 Misoperation	10 至 55Hz, 1.5mm 双振幅 10 to 55Hz,1.5mm pairs swing
冲击 Shock	耐久 Durable	最大 1,000m/S²(约 100G) 1,000m/S² max.(Approx.100G)
	误动作 Misoperation	最大 300m/S²(约 30G) 300m/S² max.(Approx.30G)
使用周围温度 Temperature		-10~+65℃ (但不结冰) -10~+65℃ (No ice)
使用周围湿度 Humidity		85%RH 以下 (+5~+35℃) 85%RH max. (+5~+35℃)
重量 Weight		约 6.2g(按钮型) Approx.6.2g(Button type)
电气寿命 Electrical life		300000 次以上 Above 300000

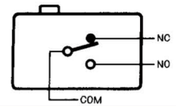
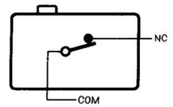
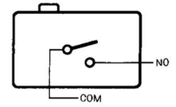
动作特性 Operating Characteristics

动作特性	型号 Model	V-15	V-151	V-152	V-153	V-154	V-155	V-156
动作力	OF 最大 (Max)	1.96N	1.96N	1.23N	0.69N	1.23N	2.35N	1.23N
回复力	RF 最小 (Min)	0.49N	0.49N	0.14N	0.06N	0.14N	0.49N	0.14N
预行程	PT 最大 (Max)	1.2mm	1.6mm	4.0mm	9.0mm	4.0mm	1.6mm	4.0mm
过行程	OT 最小 (Min)	1.0mm	0.8mm	1.6mm	2.0mm	1.6mm	0.8mm	1.6mm
应差距离	MD 最大 (Max)	0.4mm	0.6mm	1.5mm	2.8mm	1.5mm	0.6mm	1.5mm
动作位置	OP	14.7±0.4mm	15.2±0.5mm	15.2±1.2mm	15.2+2.6mm 15.2-3.2mm	18.7±1.2mm	20.7±0.6mm	20.7±1.2mm

端子的种类和规格 Type And Specification Of Terminal

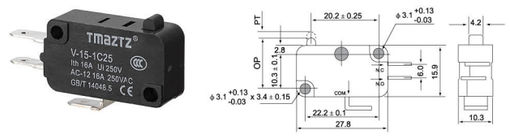
端子种类 Terminal type	#4.8 焊接 / 插销共用端子 #4.8 solder/pin common terminal	#4.8 插销端子 #4.8 pin terminal	#6.3 插销端子 #6.3 pin terminal	螺钉固定端子 Screw fixed terminal
下端子 Lower terminal				
横端子 Transverse terminal				焊接端子 Screw fixed terminal 
端子部分尺寸 Dim. of terminal part				

接点形式 contact arrangement

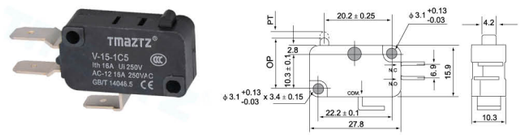
接触型式 / 端子种类	1C(双投型)	1b(常闭型)	1a(常开型)
下端子型			

外观和尺寸 Appearance and Dimension

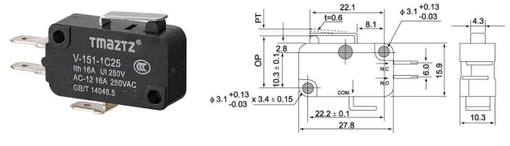
V-15-1C25



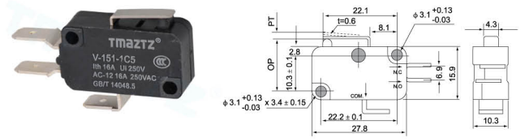
V-15-1C5 #6.3 宽端子型 # 6.3 Wide-terminal



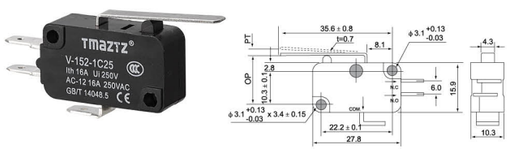
V-151-1C25



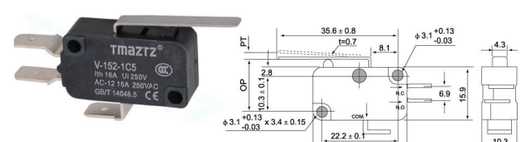
V-151-1C5



V-152-1C25

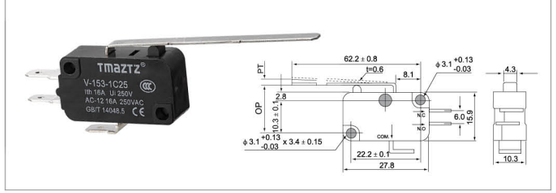


V-152-1C5

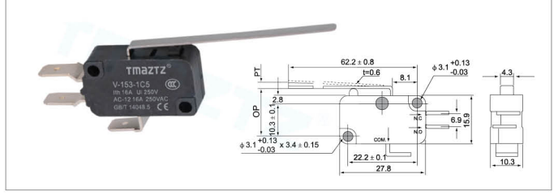


外观和尺寸 Appearance and Dimension

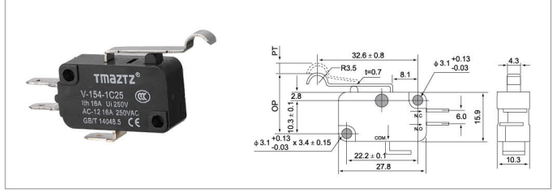
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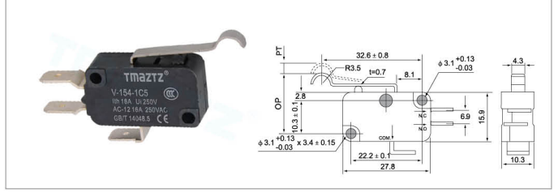
V-153-1C5



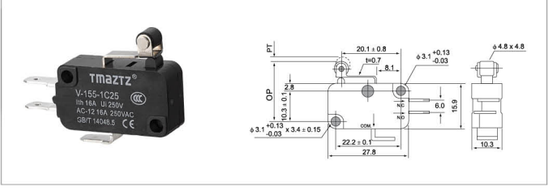
V-154-1C25



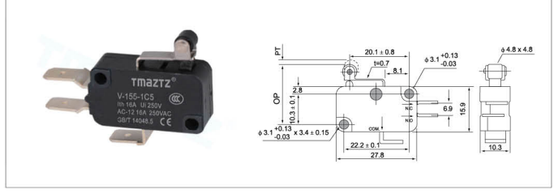
V-154-1C5



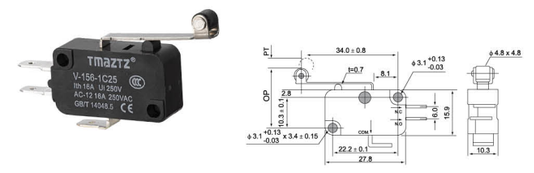
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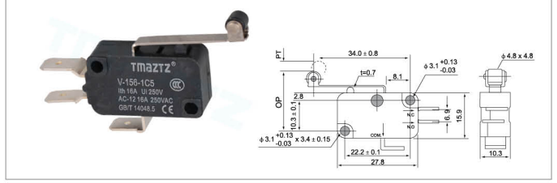
V-155-1C5



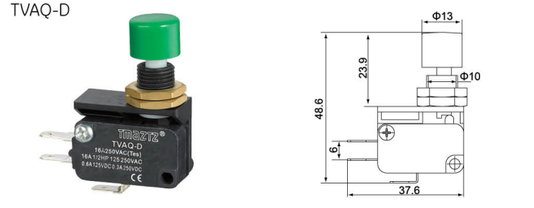
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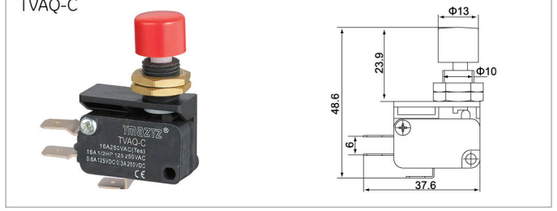
V-156-1C5



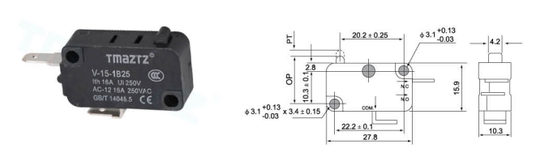
TVAQ-D



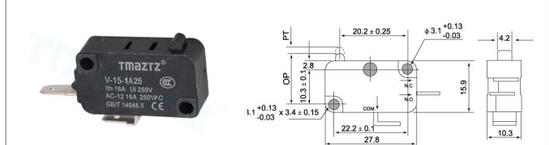
TVAQ-C



V-15-1B25



V-15-1A25

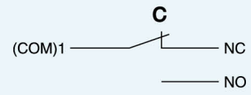


特征 Features

- ◎ 断路容量达 15A，且精度高。
- ◎ 根据用途不同，还有基本型、焊接端子型
- ◎ 标准型中还有微小负载用系列。
- ◎ 备有保护端子部位的安全，且具有防滴功能的防滴端子保护盖和塑封端子型。

- ◎ A large switching capacity of 15 A with high repeat accuracy.
- ◎ Basic and solder terminal type for selection.
- ◎ A series of standard models for micro loads is available.
- ◎ A series of molded terminal-type models incorporating safety terminal protective cover is available.

接触形式 Contact form





额定值 Ratings

额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)				突入电流 (A) Inrush Current	
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load			
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	15		3	1.5	15		5	2.5	30 以下 max.	15 以下 max.
250VAC	15		2.5	1.25	15		3	1.5		
500VAC	3		1.5	0.75	2.5		1.5	0.75		
8VDC	15		3	1.5	15		5	2.5		
14VDC	15		3	1.5	10		5	2.5		
30VDC	6(2)		3	1.5	5		5	2.5		
125VDC	0.4		0.4	0.4	0.05		0.05	0.05		
250VDC	0.2		0.2	0.2	0.03		0.03	0.03		

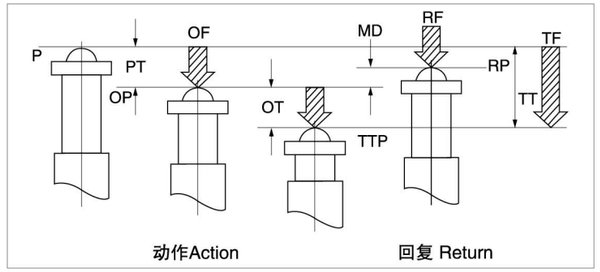
特性 Characteristics

操作速度 Operation speed	0.01mm 至 1m/sec 0.01mm-1m/sec
动作频率 Operating frequency	电气 :20 次 / 分 Electical: 20 operations/min.
接点电阻 Contact resistance	15mΩ 以下 (初期) 15mΩ max. (initial value)
绝缘电阻 Insulation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min. (at 500VDC)
电介强度 Dielectric strength	非连续端子间 1,000VAC, 50/60Hz 持续 1 分钟 1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	载电流与无载电流零件间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	端子和接地之间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between each terminal and ground
振动 Vibration	1.5mm 变振幅误动作耐久 : 10 至 55Hz 10-55Hz,1.5mm double amplitude
冲击 Shock	机械耐久 :1,000m/Sec²(约 100G’S) 误动作耐久 :300m/Sec²(约 30G’S) Mechanical durable: 1, 000m/Sec² (about 100G’S) Malfunction: 300m/Sec² (about 30G’S)
周围温度 Ambient temperature	-15℃至 +80℃ -15℃ to +80℃
湿度 Humidity	泛用型 : 35%~85%RH 以上 密封型 : 35%~95%RH General purpose type: 35%~85% RH max., Sealed type: 35%~95% RH max.
重量 Weight	约 22 至 58g About 22 to 58g
电气寿命 Electrical life	500000 次以上 Above 500000

动作特性 Operating Characteristics

动作特性	型号 Model	TM-1300	TM-1301	TM-1303	TM-1305	TM-1306	TM-1307	1308,1309	TM-1701	TM-1702	TM-1703	TM-1704	TM-1705	TM-1724	TM-1743
动作力	OF 最大 (Max)	2.45~3.43N	1.38N	1.38N	2.45~3.43N	2.45~3.43N	2.45~3.43N	2.45~3.43N	0.69N	1.57N	1.27N	1.57N	58.8mN	58.8mN	1.67N
回复力	RF 最小 (Min)	1.12N	0.14N	0.14N	1.12N	1.12N	1.12N	1.12N	0.14N	0.27N	0.21N	0.41N	4.90mN	4.90mN	0.41N
预行程	PT 最大 (Max)	0.4mm	1.6mm	1.6mm	0.4mm	0.4mm	0.4mm	0.4mm	5.6mm	2mm	4mm	2.4mm	8.3mm	19.8mm	2.4mm
过行程	OT 最小 (Min)	0.13mm	1.3mm	1.3mm	1.6mm	1.6mm	5.5mm	3.58mm	1.27mm	1mm	1.6mm	0.5mm	5.6mm	10mm	0.51mm
应差距离	MD 最大 (Max)	0.05mm	20.6mm	31.8mm	0.05mm	0.05mm	0.05mm	0.05mm	28.2mm	24.8mm	36.5mm	32.5mm	0.65mm	2mm	47.5mm
动作位置	OP	15.9±0.4mm	17.4±0.8mm	28.6±0.8mm	28.±0.8mm	21.5±0.5(mm)	21.8+0.8(mm)	33.±1mm(5)mm	19±0.8mm	19±0.8mm	30.2±0.8mm	30.2±0.4mm	19±1mm	19.8±1.6mm	41.3±0.8mm

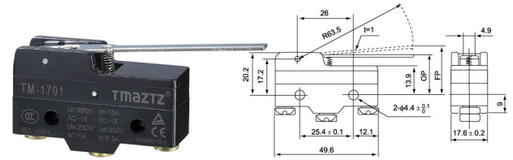
动作特性 Operating Characteristics



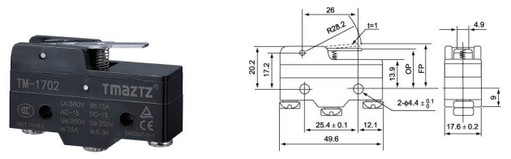
OF	动作所需之力	Operating Force
RF	回复力	Releasing Force
TF	整个移动所需之力	Total Force
FP	自由位置	Free Position
OP	动作位置	Operating Position
RP	回复位置	Releasing Position
TTP	整个移动之位置	Total Tavel Position
PT	至动作为止之移	Pretravel
OT	动作后之移动	Overtravel
MD	距差	Movement Differential
TT	整个移动	Total Tavel

外观和尺寸 Appearance and Dimension

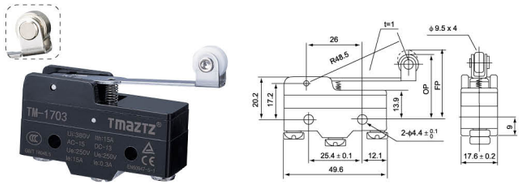
TM-1701



TM-1702

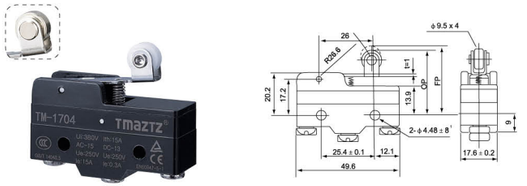


TM-1703



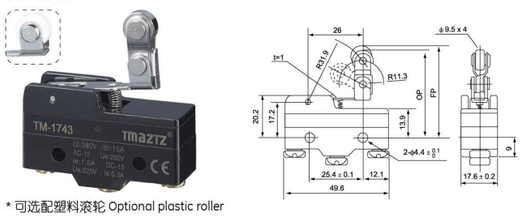
* 可选配金属滚轮 Optional metal roller

TM-1704



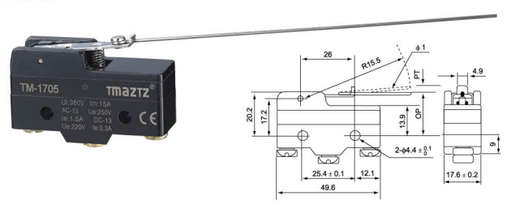
* 可选配金属滚轮 Optional metal roller

TM-1743

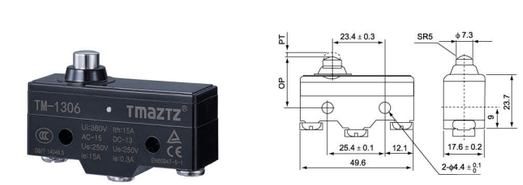


* 可选配塑料滚轮 Optional plastic roller

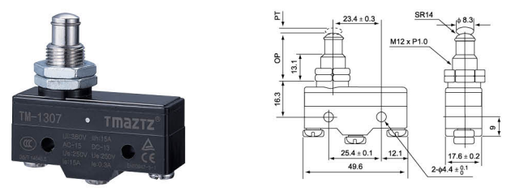
TM-1705



TM-1306



TM-1307

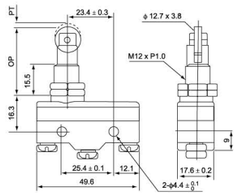


TM 微动开关 Micro Switch

外观和尺寸 Appearance and Dimension

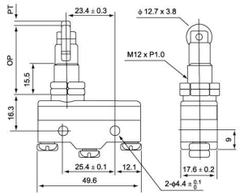
TM-1308





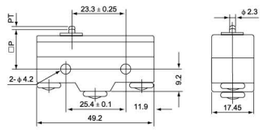
TM-1309





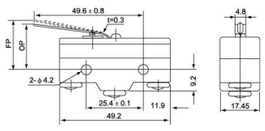
TM-1300





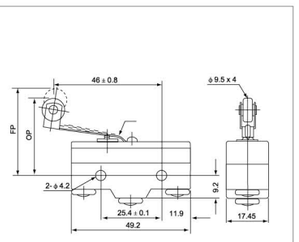
TM-1301





TM-1303

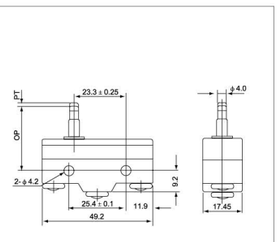




* 可选配塑料滚轮 Optional plastic roller

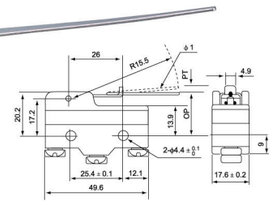
TM-1305





TM-1724





TAP-Y

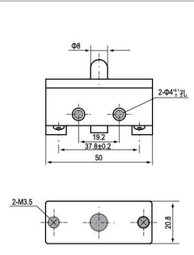


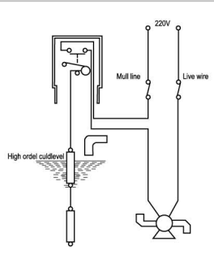
TAP-S

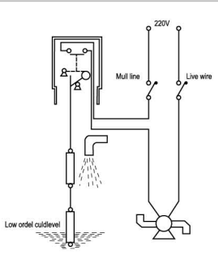


浮球开关 / 控制器 LPF-70AB 型 Float Switch/Controller LPF-70AB Type







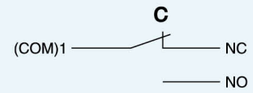


TM-1-1 防溅型微动开关 Compact Prewired Micro Switch

特征 Features

- TM1-1 使用环境、形状、安装步骤、与 TM 微动开关相同
- 保护等级达到 IP67(端子部分除外)
- 高开闭容量 (15A)
- 高精确度
- 广泛操作速度范围

- TM1-1 uses the environment, the shape, the installation procedure, and TM micro switch the same
- Degree of protection reaches IP67 (except for terminal part)
- High switch on and off capacity(15A)
- High accuracy
- Wide range of operation speed

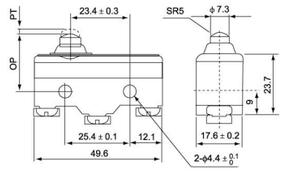




外观和尺寸 Appearance and Dimension

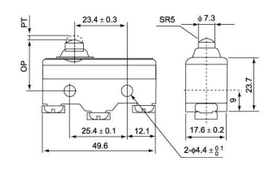
TM-1306-1





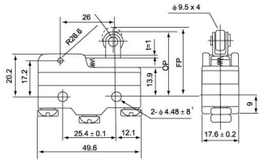
TM-1306-2





TM-1704-1

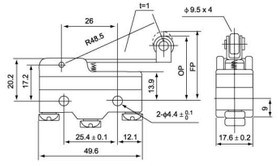




* 可选配塑料滚轮 Optional plastic roller

TM-1703-1

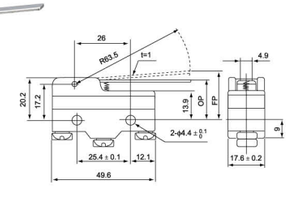




* 可选配塑料滚轮 Optional plastic roller

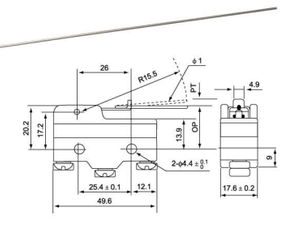
TM-1701-1





TM-1705-1



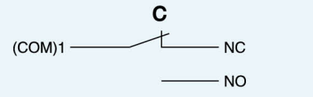


特征 Features

- ◎ 带内置标准型开关的封闭式开关，使用寿命长，高耐久性内藏微动开关确保重复精度。
- ◎ 面板安装版与 TM 标准型开关的操作位置相同。
- ◎ 比微动开关更适用于要求更高机械强度、防尘和防滴性能的应用。

- ◎ Enclosed Switches with Built-in Basic Switches for High Repeatability.
- ◎ Panel mount versions have the same operating position as Z Basic Switch.
- ◎ Suitable for applications demanding higher mechanical strength, dustproof and drip-proof properties than those on basic switches.

接触形式 Contact form





额定值 Ratings

额定电压 Rated voltage	非电感性负载 Noninductive Load (A)				电感性负载 Inductive Load (A)			
	电阻性负载 Resistance Load		灯泡负载 Lamp Load		电感性负载 Inductive Load		马达负载 Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125VAC	10		3	1.5	10		5	2.5
250VAC	10		2.5	1.25	10		3	1.5
480VAC	3		1.5	0.75	2.5		1.5	0.75
8VDC	10		3	1.5	6		5	2.5
14VDC	10		3	1.5	6		5	2.5
30VDC	6		3	1.5	5		5	2.5
125VDC	0.5		0.4	0.4	0.05		0.05	0.05
250VDC	0.25		0.2	0.2	0.03		0.03	0.03

注：1、电感性负载：功率因素 =0.4: 时间常数 =7msec。
2、灯泡负载之突入电流为稳定状态电流之 10 倍。
3、马达负载之突入电流为稳定状态电流之 6 倍。
4、带弹簧系列产品，操作体的使用范围为从弹簧的前端到弹簧全长的 1/3 以内。

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
3. while motor load has an inrush current of 6 times the steady-state current.
4. Product with spring, its usable range of operating part is within one third of the whole spring length from the front end of spring.

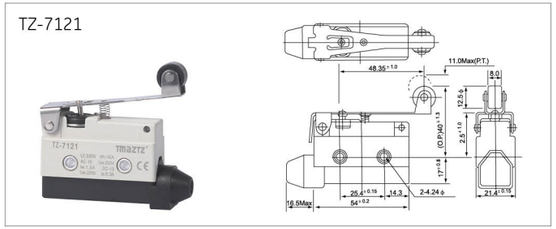
操作速度 Operation speed	0.05mm 至 50cm/sec 0.05mm-1m/sec
动作频率 Operating frequency	电气：20 次 / 分 Electical: 20 operations/min.
接点电阻 Contact resistance	15mΩ 以下 (初期) 15mΩ max. (initial value)
绝缘电阻 Insulation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min. (at 500VDC)
电介强度 Dielectric strength	非连续端子间 1,000VAC, 50/60Hz 持续 1 分钟 1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	载电流与无载电流零件间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between current-carrying and non-current-carrying metal parts
	端子和接地之间 1,500VAC, 50/60Hz 持续 1 分钟 1500VAC, 50/60 Hz for 1 minute between each terminal and ground
振动 Vibration	误动作耐久 :10 至 55Hz, 1.5mm 双振幅 Action:10 to 55Hz,1.5mm pairs swing
冲击 Shock	机械耐久 :1,000m/Sec2(约 100G’S) 误动作耐久 :100m/Sec2(约 30G’S) Mechanical durable: 1,000m/Sec2(about 100g’s) Malfunction: 100m/Sec2(about 30g’s)
周围温度 Ambient temperature	使用时 :-10~+80℃ (没有结冰 With no icing)
湿度 Humidity	35%~95% RH
重量 Weight	约 53g(TZ-7121) About 53g 约 87g(TZ-7322) About 87g
电气寿命 Electrical life	500000 次以上 Above 500000

动作特性 Operating Characteristics

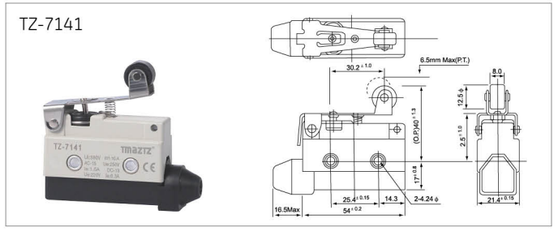
动作特性	型号 Model	TZ-7100	TZ-7110	TZ-7310	TZ-7311	TZ-7312	TZ-7120	TZ-7140	TZ-7121	TZ-7141	TZ-7124	TZ-7144	TZ-7166
动作力	OF 最大 (Max)	5.88N	5.88N	5.88N	5.88N		1.47N	2.156N	1.764N	2.352N	1.96N	2.744N	1.176N
回复力	RF 最小 (Min)	0.98N	0.98N	0.98N	0.98N		0.392N	0.588N	0.49N	0.784N	0.588N	0.98N	
预行程	PT 最大 (Max)	2.0mm	2.0mm	2.0mm	2.0mm		13.5mm	8.5mm	11.0mm	6.5mm	11mm	6.5mm	250mm
过行程	OT 最小 (Min)	0.8mm	5.0mm	6.0mm	6.0mm		4.0mm	2.5mm	3.0mm	2.0mm	3.0mm	2.0mm	11mm
应差距离	MD 最大 (Max)	0.8mm	0.8mm	0.8mm	0.8mm		3.2mm	2.0mm	2.4mm	1.5mm	2.4mm	1.5mm	
动作位置	OP	30.5±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	
自由位置	FP						35mm	32mm		46mm		56mm	

外观和尺寸 Appearance and Dimension

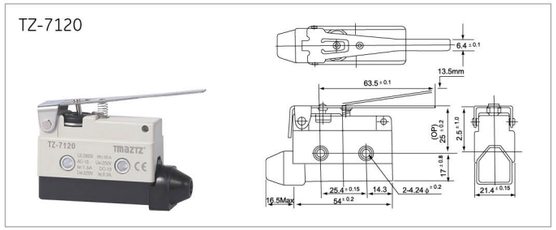
TZ-7121



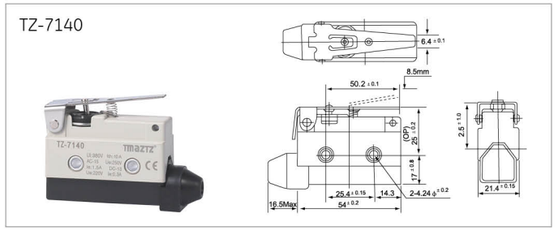
TZ-7141



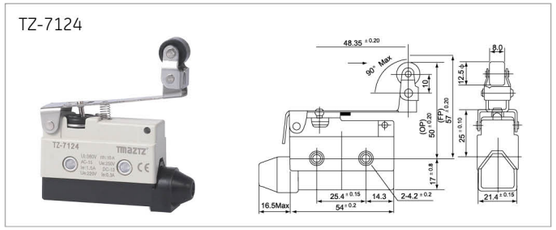
TZ-7120



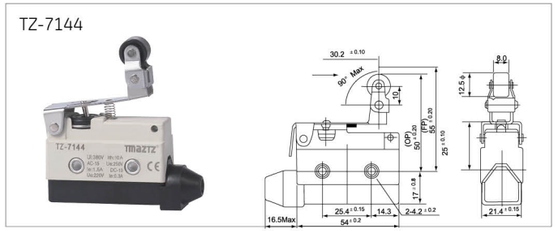
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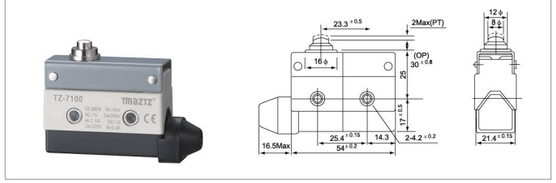
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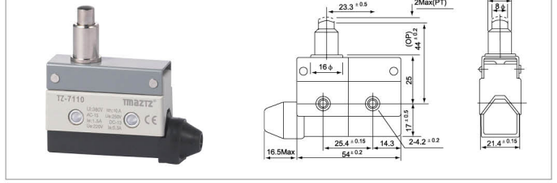
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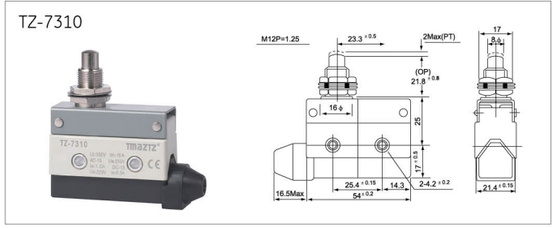
TZ-7100



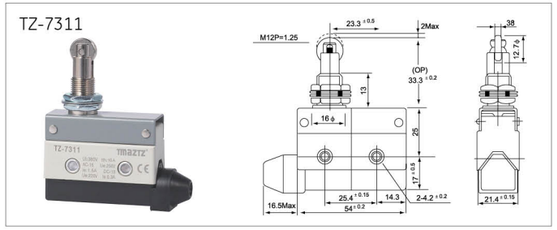
TZ-7110



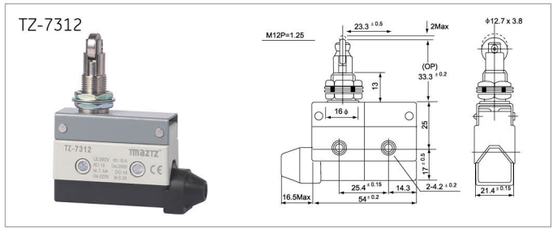
TZ-7310



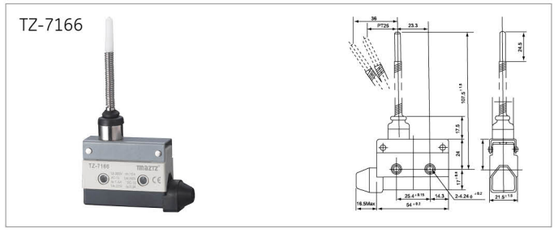
TZ-7311



TZ-7312



TZ-7166



特征 Features

◎ 用于电机的直接启动与静止，也用于负载电流的经常性启动和断开。
◎ 形式有露出型、埋入型，材料有金属外壳、塑料外壳可供选择。
◎ Used in electrical machine's start and stop,aslo used in load current's frequent open and close.
◎ Surface& flush mounting, plastic&metal shell for selection.

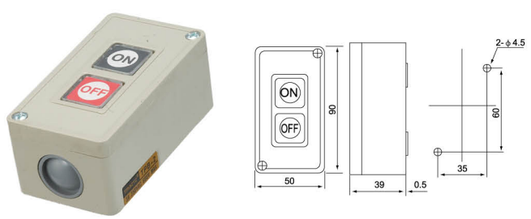


特性 Characteristics

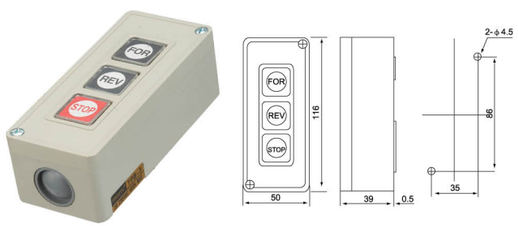
型式 Model	规格 Spec	安装型式 Mounting type	接线端子 Connection terminal	外壳材质 Material
TBSN-310	3 ϕ 10A 1.5KW	露出型 Surface mounting	M3.5	铁烤漆 Iron
TBSN-315	3 ϕ 15A 2.2KW		M4	
TBSN-330	3 ϕ 30A 3.7KW		M5	
TBSP-315	3 ϕ 15A 2.2KW	露出型 Surface mounting	M4	强化塑胶 Plastic
TBSP-330	3 ϕ 30A 3.7KW			
TBSY-315	3 ϕ 15A 2.2KW	埋入型 Flush mounting	M4	铁烤漆 Iron
TBSY-330	3 ϕ 30A 3.7KW			
TBSS-315	3 ϕ 15A 2.2KW	埋入型 Flush mounting	M3.5	铁烤漆 Iron
TBSS-330	3 ϕ 30A 3.7KW		M4	
TPB-2	3A 250VAC	露出型 Surface mounting	M4	强化塑胶 Plastic
TPB-3	3A 250VAC			

按钮开关 Pushbutton Switchw

TPB-2

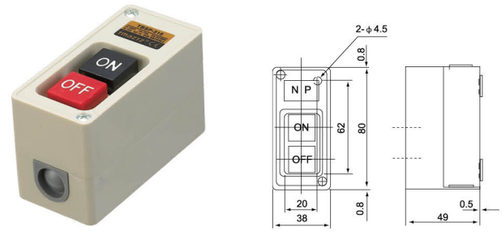


TPB-3

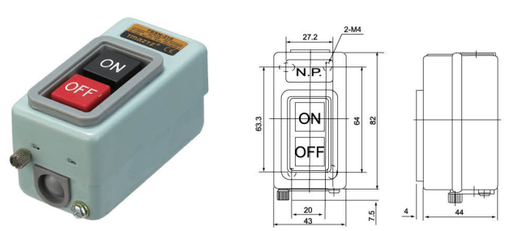


外观和尺寸 Appearance and Dimension

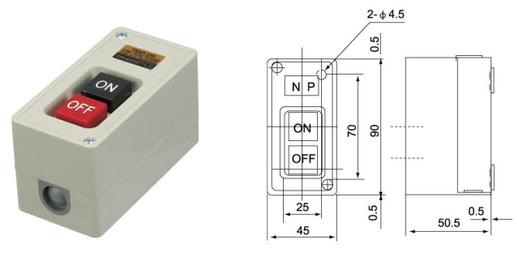
TBSP-315



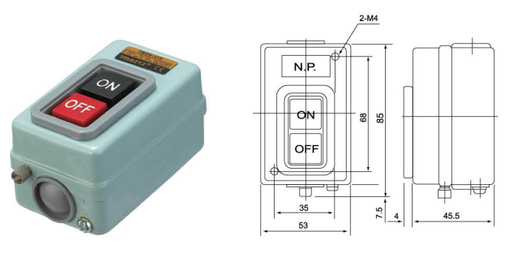
TBSN-310



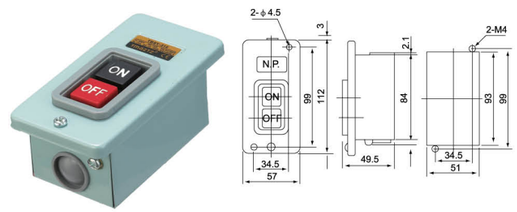
TBSP-330



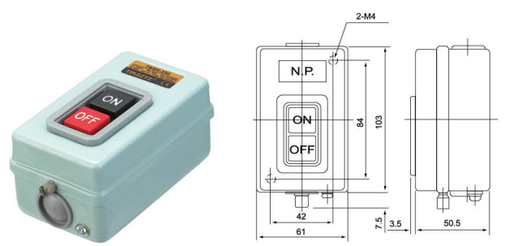
TBSN-315



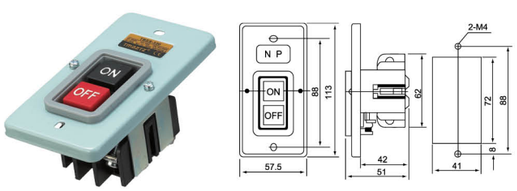
TBSY-315
TBSY-330



TBSN-330



TBSS-315
TBSS-330



特征 Features

- ◎ 切换方式有固定式及复位式 (单投及双投皆可复归)
- ◎ 接线端子有螺丝端子、焊接端子与快速端子
- ◎ 防水套可防水、防油 , 适用于全系列
- ◎ 固定孔径 : ϕ 12mm

- ◎ Movement way has fixed type and auto-return type (both single-throw and double-throw can return)
- ◎ The terminal block has screw terminal, solder terminal and tab terminal
- ◎ Rainproof cap, water-proof and oil-proof, it is suitable for full series products
- ◎ Mounting hole: ϕ 12mm



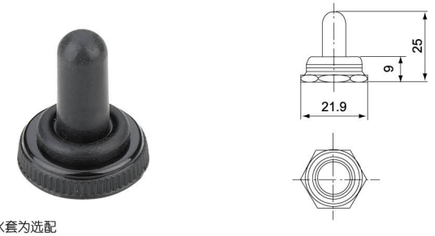
额定值 Ratings

负载 Load	型式 Type	AC 负载 Rating	DC 负载 Rating
电阻性负载 Resistance Load	TO	10A 250V 15A 125V	0.4A 250V 0.8A 125V
	T5	15A 250V 20A 125V	0.5A 250V 0.9A 125V
电感性负载 Inductive Load	TO	10A 250V 15A 250V	0.2A 250V 0.4A 125V
	T5	15A 250V 20A 125V	0.3A 250V 0.5A 125V 15A
灯泡负载 Lamp Load	TO	300W 100V 500W 200V	30V
	T5	400W 125V 800W 250V	-
马达负载 Motor Load	TO	200W 125V 300W 250V	7A 30V
	T5	400W 125V (single phase)	
	TO	550W 250V (three phase)	-
	T5	750W 250V (three phase)	

特性 Characteristics

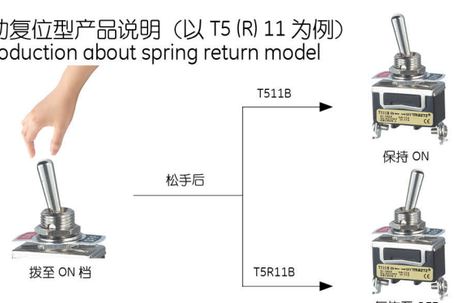
接触电阻 Contact resistance	15mΩ 以下 (初期值) max. (initial)
绝缘电阻 Insulation resistance	100MΩ 以上 above(在 500VDC 下) Under 500VDC
电介强度 Dielectric strength	1890VAC，50/60Hz 持续 1 分钟 For 1minute
振动 Vibration	10 至 55Hz，1.5mm 双振幅 Double amplitude
周围温度 Ambien temperture	-10℃ ~+70℃ (没有结冰 With no icing)
湿度 Humidity	85% 以下 85% RH max
重量 Weight	约 24.5g(T511B) About 24.5g 约 36.5g(T523B) About 36.5g
电气寿命 Electrical life	25000 次以上 Above 25000

TOW 防水套 Rainproof cap (Tow)

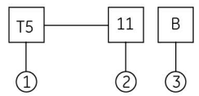


注 : 防水套为选配

自动复位型产品说明（以 T5 (R) 11 为例）
Introduction about spring return model



型号说明 Model Designations



项目 Items	代号 Code	说明 Description
型式 Type	TO	10A 250VAC
	TOR	10A 250VAC 自动复位 Spring return
	T5	15A 250VAC*
	T5R	15A 250VAC 自动复位 Spring return*
接点 Contact	11	单极单投 Single pole single throw ON-OFF
	12	单极双投 Single pole double throw ON-ON
	13	单极双投 (中间 OFF) Single pole double throw (central OFF)ON-OFF-ON
	131	单极双投 (中间 OFF 单边复位) Single pole double throw (central OFF single return)ON-OFF-ON
	21	双极单投 Double pole single throw ON-OFF
	22	双极双投 Double pole double throw ON-ON
	23	双极双投 (中间 OFF) Double pole double throw (central OFF)ON-OFF-ON
	231	双极双投 (中间 OFF 单边复位) Double pole double throw (central OFF single return)ON-OFF-ON
端子 Terminal	A	快速端子 (#250) Tab terminal
	B	螺丝端子 Screw terminal
	C	焊接端子 (#187) Solder terminal

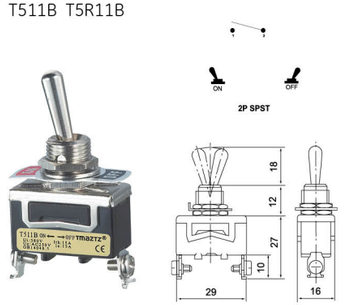
* 本产品默认型式为 T5
* Default tupe is T5

T5 钮子开关 Toggle Switch

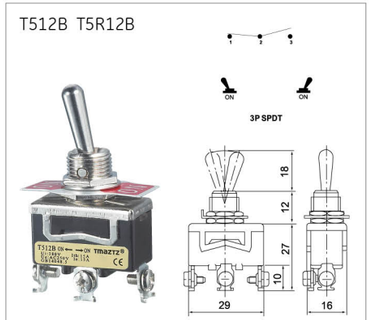
tmaztz® 永得工控开关

外观和尺寸 Appearance and Dimension

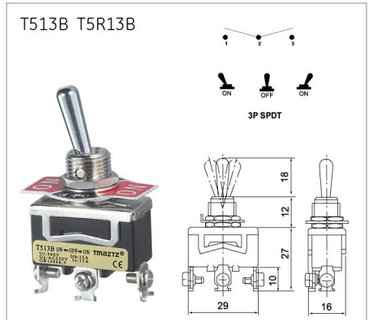
T511B T5R11B



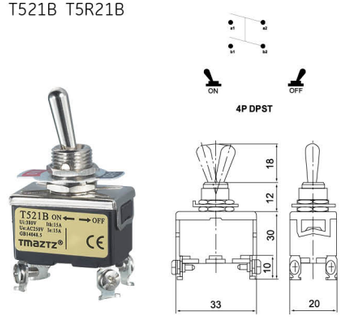
T512B T5R12B



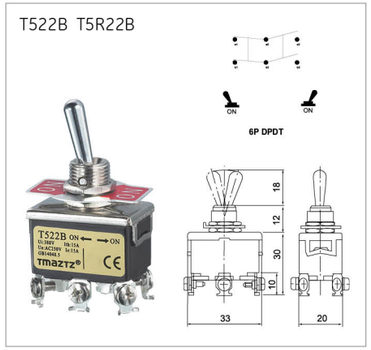
T513B T5R13B



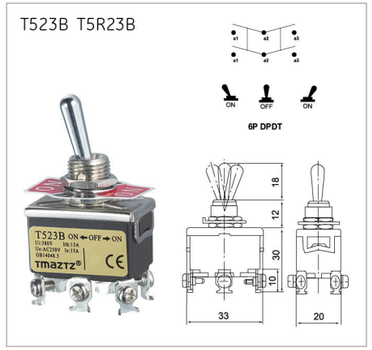
T521B T5R21B



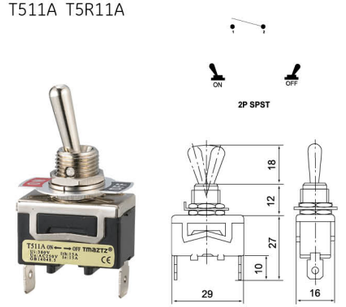
T522B T5R22B



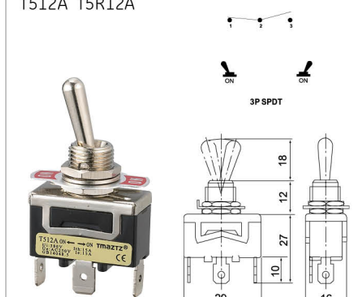
T523B T5R23B



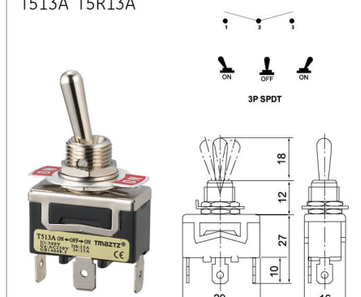
T511A T5R11A



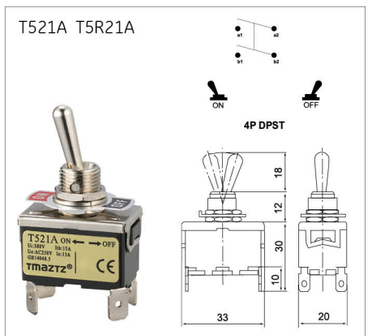
T512A T5R12A



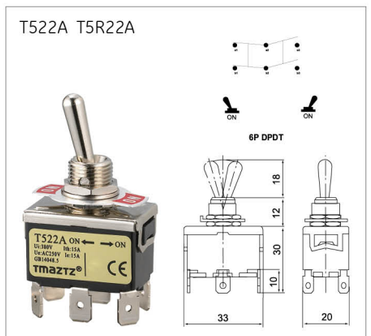
T513A T5R13A



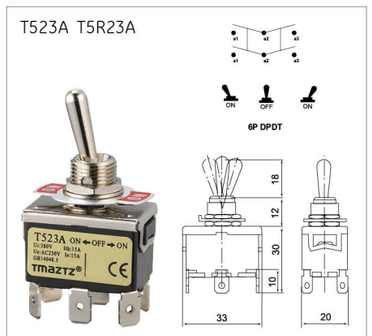
T521A T5R21A



T522A T5R22A



T523A T5R23A



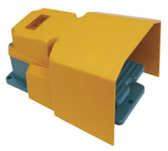
特性 Characteristics

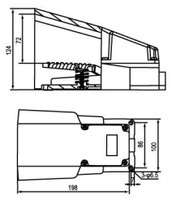
种类 Designation	型式 Model	负荷 Rating	微动开关形式 Type of switch enclosed &contact arrangement	电缆种类 / 长度 Cable type / length	接点 Contact Type	动作压力 Action force	外壳材质 Material of Rind
小型脚踏开关 Mini type	TFS-201	10A 250VAC	V-15 微动开关	0.5mm2,3C/1 meter(米)~3 meter(米)	1A1B	0.7kg	塑胶 Plastic
	TFS-01	10A 250VAC	V-15 微动开关	0.5mm2,3C/1 meter(米)~3 meter(米)	1A1B	0.7kg	
	TFS-1	10A 250VAC	V-15 微动开关	0.5mm2,3C/1 meter(米)~3 meter(米)	1A1B	0.9kg	铁壳 Iron
标准型 - 点动式 Standard type Momentary Action	TFS-101	10A 250VAC	V-15 微动开关	0.75mm2,3C/0.5 meter(米),1 meter(米)~3 meter(米)	1A1B	1.2kg	塑胶 Plastic
	TFS-102	15A 250VAC	TM-1704	0.75mm2,3C/1 meter(米),1.5 meter(米)~2 meter(米)	1A1B	1.1kg	
	TFS-2	10A 250VAC	V-15 微动开关	0.5mm2,3C/1 meter(米)~3 meter(米)	1A1B	1.1kg	铝合金 Aluminum Cast
	TFS-3	10A 250VAC	V-15 微动开关	0.75mm2,3C/0.5 meter(米),1 meter(米)~3 meter(米)	1A1B	1.2kg	
	TFS-3S	15A 250VAC	TM-1704	0.75mm2,3C/1 meter(米),1 meter(米)~3 meter(米)	1A1B	1.1kg	
标准式 - 交替式 Standard type Alternate action	TFS-105	6A 250VAC	TS-105	0.75mm2 ,2C/1 meter(米),1 meter(米)~2 meter(米)	PUSH ON PUSH OFF	2kg	塑胶 Plastic
大型 - 无护罩型 Large type- None protective guard	TFS-402	15A250VAC	TM-1704	附电缆固定头，不附电缆 Accessory: Cable gland (No cable)	1A1B	3.2kg	铝合金 Aluminum Cast
	TFS-404	15A 250VAC	TM-1704 x 2		2A2B	3.2kg	
	TFS-802	15A 250VAC	TM-1704		2*1A1B	3.2kg	
大型 - 半护罩型 Large type-Top protective guard	TFS-302	15A 250VAC	TM-1704		1A1B	3.2kg	
	TFS-304	15A 250VAC	TM-1704 x 2		2A2B	3.2kg	
	TFS-702	15A250VAC	TM-1704		2*1A1B	3.2kg	
大型 - 全护罩型 Large type- Protective guard	TFS-502	15A250VAC	TM-1704		1A1B	3.2kg	
	TFS-504	15A250VAC	TM-1704		2A2B	3.2kg	
	TFS-602	15A250VAC	按钮弹簧式 Button spring type		2*1A1B	2.8kg	

触点类型见 P28 与 P31。 Contact types refer to P28 and P31
带电缆的种类，标配长度为 1m。

外观和尺寸 Appearance and Dimension

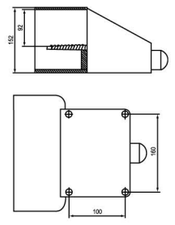
TFS-502
TFS-504



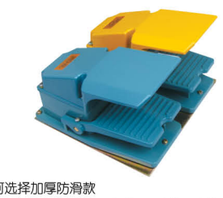


TFS-602

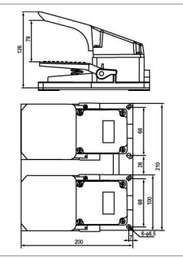




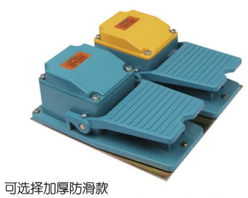
TFS-702



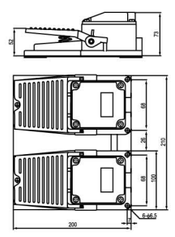
可选择加厚防滑款
*Optional thicker &anti-slip model model



TFS-802



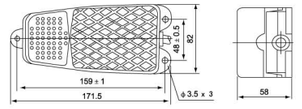
可选择加厚防滑款
*Optional thicker &anti-slip model model



外观和尺寸 Appearance and Dimension

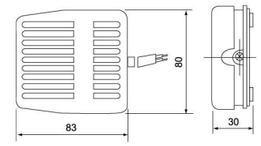
TFS-101
TFS-102
TFS-105





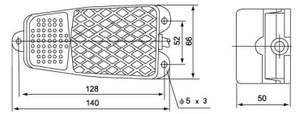
TFS-201
TFS-202





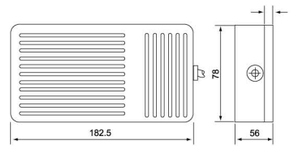
TFS-2





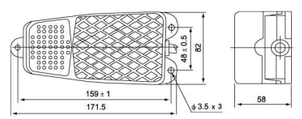
TFS-01





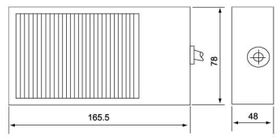
TFS-3
TFS-3S





TFS-1

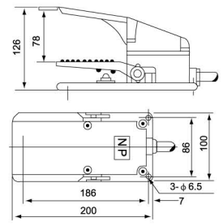




TFS-302
TFS-304



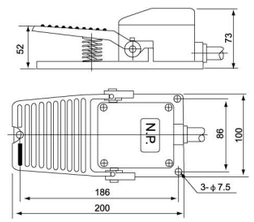
可选择加厚防滑款
*Optional thicker &anti-slip model model



TFS-402
TFS-404



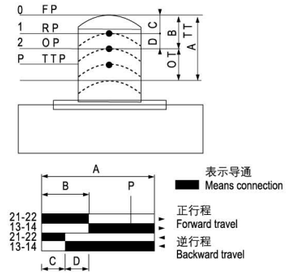
可选择加厚防滑款
*Optional thicker &anti-slip model model



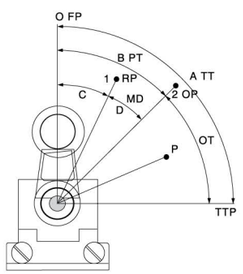
动作特性图 Acting Characteristic Diagram

快速动作型 Quick-acting type

按动式 Press type



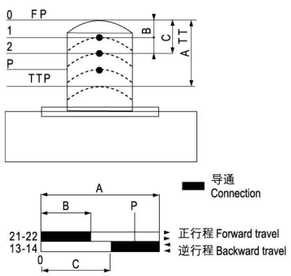
回转式 Rotary type



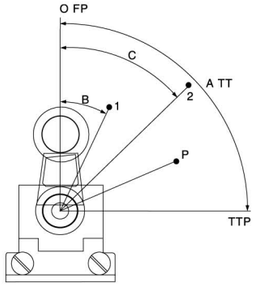
欧洲术语 European term	符合 JIS C 4508 标准的术语 Terms in conformity with the standard JIS C 4508
A 最大行程 A represents max. travel	TT 总行程 TT total travel
B 触发行程 B represents triggering travel	PT 接近行程 PT proximity travel
C 复位行程 C represents reset travel	-
D 行程差 D represents travel difference	MD 位移差 MD movement difference
P 保证可靠断开的触点 P represents contacts that guarantee to disconnect reliably	-
A-B 专用名称 A-B specific term	OT 超出行程 OT over travel
1 复位点 1 reset point	RP 释放位置 RP releasing position
2 触发点 2 trigger point	OP 动作位置 OP operating position
0 无专用名称 0 no specific term	FP 起始位置 FP initial position
- 无专用名称 - no specific term	TTP 总行程位置 TTP total travel position

慢速动作型 Slow-acting type

按动式 Press type



回转式 Rotary type



欧洲术语 European term	符合 JIS C 4508 标准的术语 Terms in conformity with the standard JIS C 4508
A 最大行程 A represents max. travel	TT 总行程 TT total travel
B 常闭触点的触发和复位行程 B triggering and reset travel of NC contact	-
C 常开触点的触发和复位行程 C triggering and reset travel of NO contact	-
P 保证可靠断开的触点 P represents contacts that guarantee to disconnect reliably	-
1 常闭触点的触发和复位点 1 triggering and reset point of NC contact	-
2 常开触点的触发和复位点 2 triggering and reset point of NO contact	-
0 无专用名称 0 no specific term	FP 起始位置 FP initial position
- 无专用名称 - no specific term	TTP 总行程位置 TTP total travel position

触点类型 Contact Type

IEC 947.5.1			NEMA			JIS	
型式 Type	符号 Symbol	说明 Description	型式 Type	符号 Symbol	说明 Description	符号 Symbol	说明 Description
A X		单分断 Single-breaking 双分断 Double-breaking	A				
B Y		单分断 Single-breaking 双分断 Double-breaking	B				
C			C				单分断 Single-breaking
Za		相同极性 Same polarity	Z		仅适于相同极性 For same polarity only		双分断 Double-breaking
Zb		电气隔离 Electric isolation					

触点接线图 型式 Za、Zb、C Wiring Diagram Of Contacts, Type Za, Zb, and C

相同极性电路 Circuit of same polarity

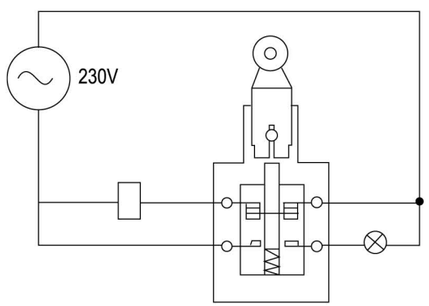
型式 Za Type Za

型式 Zb Type Zb

型式 C Type C

交替动作 Alternate action

仅适于型式 Zb For type Zb only



混合电压 Mixed voltage

仅适于型式 Zb For type Zb only

