

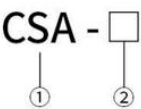


特点 Features

- 双回路型限位开关
- 结构坚固，由锌合金及强化塑胶组成
- 可防水、防油
- 内藏触点座有双簧片设计，机械寿命长
- 具有较大的过行程
- 引动器种类多，方便使用
- Double circuit type of limit switch
- High mechanical strength, consists of intensive plastic and aluminum cast
- Water-proof and oil proof construction
- Built-in contact box has double-spring and long mechanical life
- Smooth operation with larger over travel distance
- Various actuators for different application



选型说明 Model Designation



序号 No	项目 Item	代号 Code	说明 Description
①	产品系列 Product series	CSA	立式限位开关 Vertical limit switch
②	头部结构 Head structure	001	柱塞型 Plunger type
		012	带铁架滚轮型 Roller type with iron frame
		003	横轮柱塞型 Cross wheel plunger type
		021	滚轮摆杆型 Roller swing bar type
		031	可调摆杆滚轮型 Adjustable pendulum rod roller type
		061	触须型 Palp type
		071	塑料杆盘簧型 Plastic rod coil spring type
		081	盘簧型 Coil spring type
		041	橡胶滚轮摆杆型 Rubber roller swing bar type
		051	可调摆杆塑胶滚轮型 Adjustable swing rod plastic roller type
		021M	金属滚轮摆杆型 Metal roller swing bar type
		031M	可调摆杆金属滚轮型 Adjustable pendulum rod metal roller type
		002	竖轮柱塞型 Vertical wheel plunger type

特性 Characteristics

操作速度 Operation speed	5mm 至 0.5m/s 5mm-0.5m/s
动作频率 Operating frequency	电气:30次/分 Electrical: 30 operations/min
接触电阻 Contact resistance	25mΩ 以下 (初期) 25mΩmax. (initial value)
绝缘电阻 Insulation resistance	100MΩ 以上 (在 500VDC 以下) 100MΩ min. (at 500VDC)
最小使用负载 Minimum working load	DC24V 10mA 以上 Min DC24V 10mA
额定绝缘电压UI Rated insulation voltage	300V
额定冲击耐受电压Uimp Rated impulse withstand voltage	4kV
约定自由空气发热电流Ith Convention free air heating current	10A
电介强度 Dielectric strength	非连续端子间1000VAC, 50/60Hz持续1分钟 1000VAC, 50/60 Hz for 1 minute between terminals of the same polarity
	载电流与无载电流零件间1500VAC, 50/60Hz持续1分钟 1500VAC, 50/60 HZ for 1 minute between current-carrying and non-current-carrying metal parts
	端子和接地之间1500VAC, 50/60Hz持续1分钟 1500VAC, 50/60 HZ for 1 minute between each terminal and ground
振动 Vibration	10至55Hz, 1.5mm双振幅 10-55Hz, 1.5mm double amplitude
冲击 Shock	机械耐久 :1,000m/Sec ² (约 100G' S) 误动作耐久 :300m/Sec ² (约 30G' S) Mechanical durable: 1,000m/Sec ² (about 100G' S) Malfunction: 300m/Sec ² (about 30G' S)
周围温度 Ambient temperature	使用时 :-20~+70°C (没有结冰) Using: -20~+70°C (With no icing)
湿度 Humidity	95%RH 以下 <95% RH max
电气寿命 Electrical life	30万次以上(AC240V/3A阻性负载) More than 300,000 cycles (AC240V/3A resistive load)
防水等级 Protection level	IP66

注1. 上述值为初始值。

注2. 有些型号中可能与上述内容不同, 请另外垂询。

*1.该保护结构基于标准(EN69047-5-1)规定的测试方法, 请根据使用环境、使用条件来事先确认密封性。

*2.寿命的条件为环境温度25~35°C、环境湿度40~70%RH时的数值。

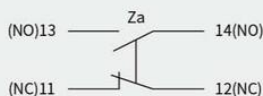
Note 1. The above values are Initial values.

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

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

*2.The conditions of life are the values under the ambient temperature of 25~35°C and humidity of 40 to 70% RH. For other detailed conditions, please contact us.

接点型式 Contact Form



国际认证规格 International Certification Specifications

认证规格 Certification specifications	规格 Specifications	文件No. Document
CCC	GB/T 14048.5	请咨询昌得代表处 Please consult the CNTD Representative Office
CE	EN 60947-5-1	

安全标准认证额定规格 Safety Standard Certification Rated Specifications

CCC(GB/T 14048.5)

项目 Item	使用类型 Usage type	AC-15	DC-13
额定工作电流 Rated working current(Ie)		15A	0.3A
额定工作电压 Rated working voltage(Ue)		250V	220V

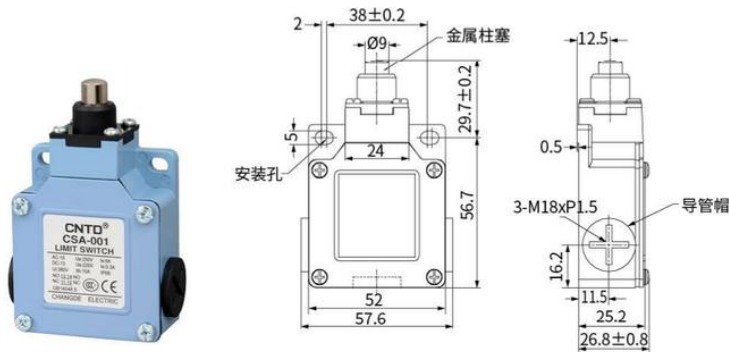
注：请使用符合IEC60269的gl或gG型10A保险丝作为短路保护装置。开关内未配保险丝。

Note: Please use gl or gG 10A fuses that comply with IEC60269 as short-circuit protection devices. The switch is not equipped with a fuse.

外观和尺寸 Appearance and Dimension

CSA-001

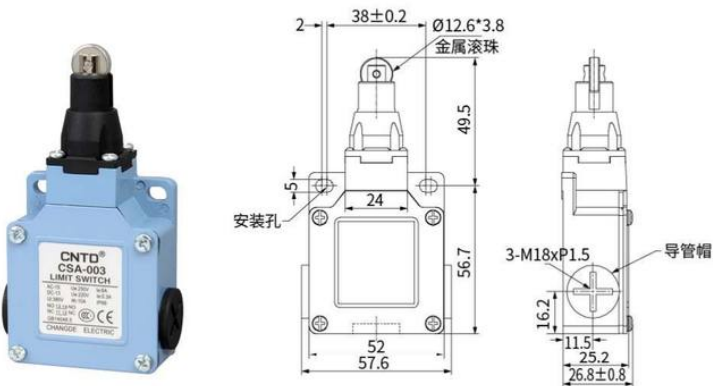
柱塞型
Plunger type



动作特性 Operating Characteristics	CSA-001
操作力 OF (最大Max.)	8N
回弹力 RF (最小Min.)	4N
预行程 PT (最大Max.)	1.8mm
触发位置 TP±10%	2.0mm
回差 MD (最大Max.)	1.2mm
过行程 OT (最小Min.)	4.0mm
总行程TT(最小Min)	5.8mm
摇臂转换分角度	-

CSA-003

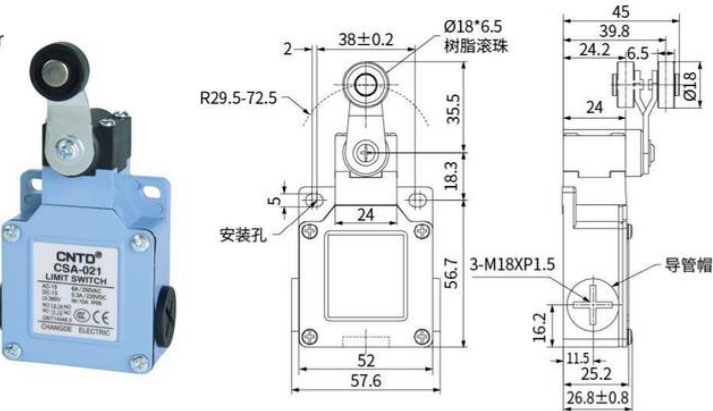
横轮柱塞型
Cross wheel plunger type



动作特性 Operating Characteristics	CSA-003
操作力 OF (最大Max.)	8N
回弹力 RF (最小Min.)	4N
预行程 PT (最大Max.)	1.8mm
触发位置 TP±10%	2.0mm
回差 MD (最大Max.)	1.2mm
过行程 OT (最小Min.)	4.0mm
总行程TT(最小Min)	5.8mm
摇臂转换分角度	-

CSA-021

滚轮摆杆型
Roller swing bar type

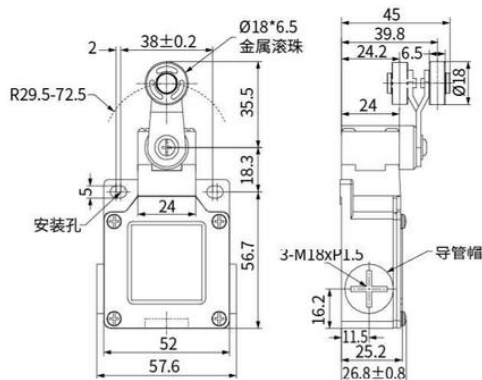


动作特性 Operating Characteristics	CSA-021
操作力 OF (最大Max.)	4N
回弹力 RF (最小Min.)	1N
预行程 PT (最大Max.)	20°
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	10°
过行程 OT (最小Min.)	75°
总行程TT(最小Min)	95°
摇臂转换分角度	22.5°

外观和尺寸 Appearance and Dimension

CSA-021M

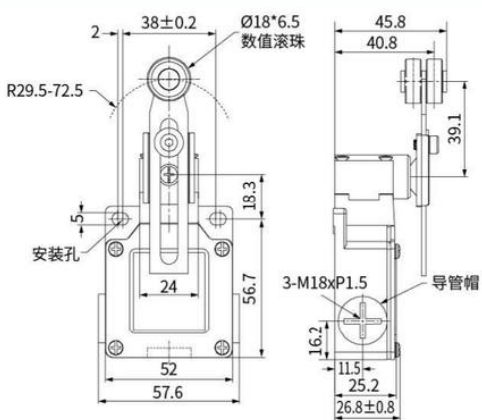
金属滚轮摆杆型
Metal roller
swing bar type



动作特性 Operating Characteristics	CSA-021M
操作力 OF (最大Max.)	4N
回弹力 RF (最小Min.)	1N
预行程 PT (最大Max.)	20°
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	10°
过行程 OT (最小Min.)	75°
总行程TT(最小Min)	95°
摇臂转换分角度	22.5°

CSA-031

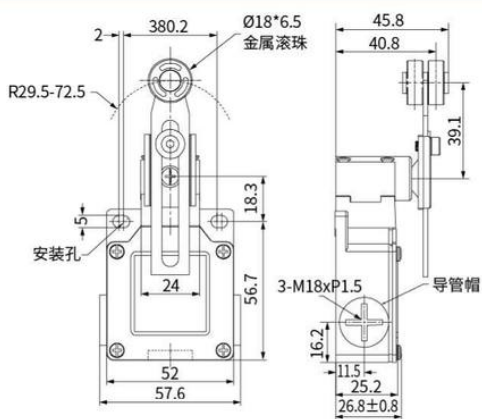
可调摆杆滚轮型
Adjustable
pendulum rod
roller type



动作特性 Operating Characteristics	CSA-031
操作力 OF (最大Max.)	4N
回弹力 RF (最小Min.)	1N
预行程 PT (最大Max.)	20°
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	10°
过行程 OT (最小Min.)	75°
总行程TT(最小Min)	95°
摇臂转换分角度	22.5°

CSA-031M

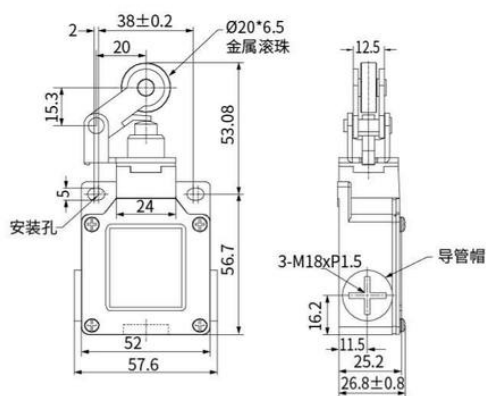
可调摆杆金属
滚轮型
Adjustable
pendulum rod
metal roller type



动作特性 Operating Characteristics	CSA-031M
操作力 OF (最大Max.)	4N
回弹力 RF (最小Min.)	1N
预行程 PT (最大Max.)	20°
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	10°
过行程 OT (最小Min.)	75°
总行程TT(最小Min)	95°
摇臂转换分角度	22.5°

CSA-012

带铁架滚轮型
Roller type with
iron frame

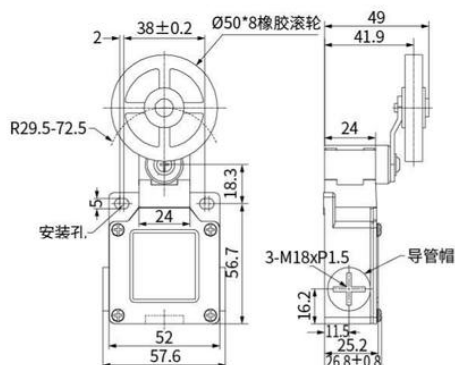


动作特性 Operating Characteristics	CSA-012
操作力 OF (最大Max.)	8N
回弹力 RF (最小Min.)	4N
预行程 PT (最大Max.)	1.8mm
触发位置 TP±10%	2.0mm
回差 MD (最大Max.)	1.2mm
过行程 OT (最小Min.)	4.0mm
总行程TT(最小Min)	5.8mm
摇臂转换分角度	-

外观和尺寸 Appearance and Dimension

CSA-041

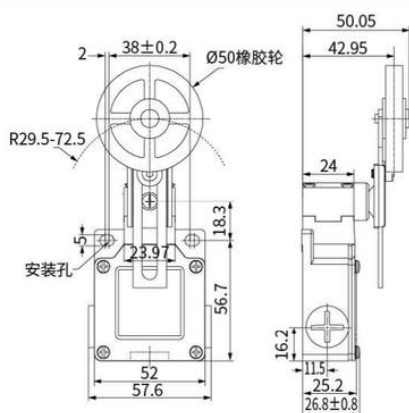
橡胶滚轮摆杆型
Rubber roller
swing bar type



动作特性 Operating Characteristics	CSA-041
操作力 OF (最大Max.)	4N
回弹力 RF (最小Min.)	1N
预行程 PT (最大Max.)	20°
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	10°
过行程 OT (最小Min.)	75°
总行程TT(最小Min)	95°
摇臂转换分角度	22.5°

CSA-051

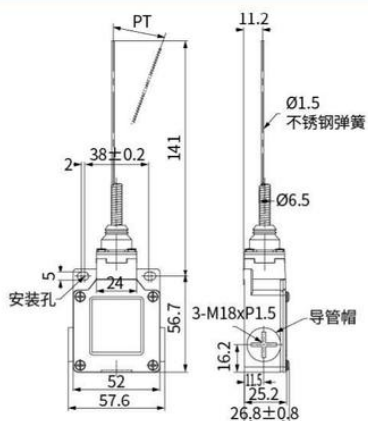
可调摆杆塑胶
滚轮型
Adjustable
swing rod
plastic roller
type



动作特性 Operating Characteristics	CSA-051
操作力 OF (最大Max.)	4N
回弹力 RF (最小Min.)	1N
预行程 PT (最大Max.)	20°
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	10°
过行程 OT (最小Min.)	75°
总行程TT(最小Min)	95°
摇臂转换分角度	22.5°

CSA-061

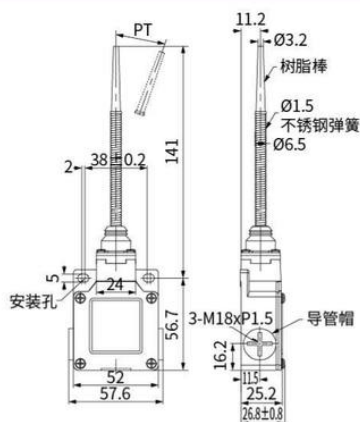
触须型
Palp type



动作特性 Operating Characteristics	CSA-061
操作力 OF (最大Max.)	1.5N
回弹力 RF (最小Min.)	0.5N
预行程 PT (最大Max.)	30mm
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	14°
过行程 OT (最小Min.)	20mm
总行程TT(最小Min)	50mm
摇臂转换分角度	-

CSA-071

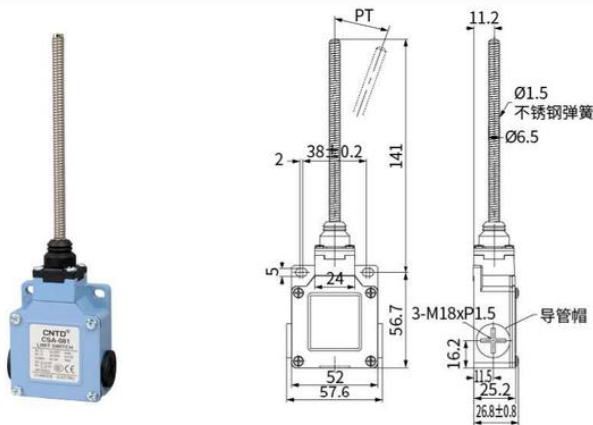
塑料杆盘簧型
Plastic rod coil
spring type



动作特性 Operating Characteristics	CSA-071
操作力 OF (最大Max.)	1.5N
回弹力 RF (最小Min.)	0.5N
预行程 PT (最大Max.)	30mm
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	14°
过行程 OT (最小Min.)	20mm
总行程TT(最小Min)	50mm
摇臂转换分角度	22.5°

外观和尺寸 Appearance and Dimension

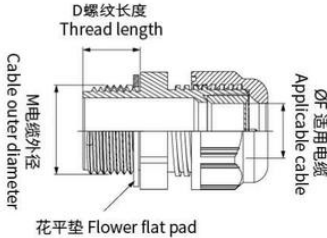
CSA-081
盘簧型
Coil spring type



动作特性 Operating Characteristics	CSA-081
操作力 OF (最大Max.)	1.5N
回弹力 RF (最小Min.)	0.5N
预行程 PT (最大Max.)	30mm
触发位置 TP±10%	22.5°
回差 MD (最大Max.)	14°
过行程 OT (最小Min.)	20mm
总行程 TT(最小Min)	50mm
摇臂转换分角度	22.5°

连接器 Connector

为了符合 IP67 标准, 请使用推荐的连接器
To comply with the IP67 standard, please use the recommended connector

连接器图片 Connector picture				连接器尺寸 Connector size			
							
M16*1.5-07	M18*1.5-07	M20*1.5-07	M20*1.5-09				
连接器型号 Connector model	螺纹规格 M Thread specification M	螺纹长度 D Thread length D	适用电缆外径 F Applicable cable outer diameter F	连接器防护等级 Connector protection grade	温度 Temperature	密封垫类型 Gasket type	颜色 Color
M20*1.5-07	M20*1.5	10mm	Ø4-7mm	IP67	-25~80℃	花平垫 Flower flat pad	灰色 / 黑色可选 Grey / Black Optional
M20*1.5-09	M20*1.5	10mm	Ø5-9mm	IP67		花平垫 Flower flat pad	
M18*1.5-07	M18*1.5	10mm	Ø4-7mm	IP67		花平垫 Flower flat pad	
M16*1.5-07	M18*1.5	10mm	Ø4-7mm	IP67		花平垫 Flower flat pad	

CSA 系列产品, 常规导管螺纹默认为 M18*1.5, 请使用建议的连接器和密封垫, 并按照正确的扭矩进行固定。同时, 请使用与连接器相匹配外径的电缆。建议使用的连接器螺纹长度不长于 10mm, 否则螺纹会在开关盒内凸起或连接器按装不紧, 从而干扰其他元件及防护等级, 需其他导管螺纹的产品定制生产, 同时需匹配相对应的连接器。

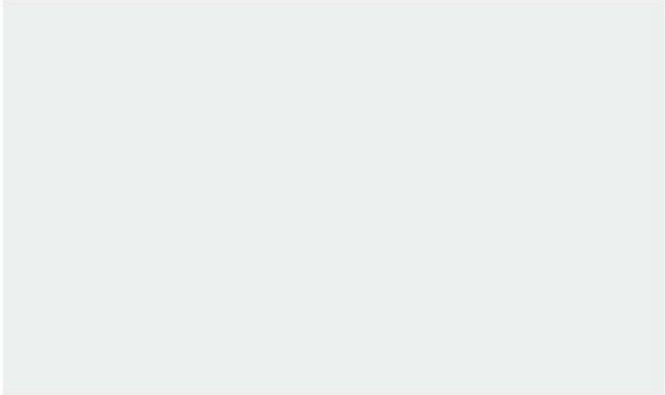
For the CSA series products, the default standard conduit thread is M18*1.5. Please use the recommended connectors and gaskets and fix them according to the correct torque. At the same time, please use a cable with an outer diameter that matches the connector. It is recommended that the thread length of the connector used should not exceed 10mm; otherwise, the thread may protrude inside the switch box or the connector may not be installed tightly, thereby interfering with other components and the protection level. For products that require other conduit threads, customized production is necessary, and corresponding connectors should also be matched.

正确的固定扭矩 Correct Fixing Torque

松动的螺丝可能导致设备提前故障。请确保各部件的螺丝根据规定的扭矩紧固，以保障设备的稳定性和安全性。特别是在改变头部方向时，必须重新确认上述扭矩，并保证所有螺丝均匀紧固。同时，要注意防止异物进入内部。

Loose screws may lead to premature equipment failure. Ensure that screws on each component are tightened to the specified torque for stability and safety. It is crucial to reconfirm the specified torque and ensure that all screws are evenly tightened, especially after adjusting the orientation of the head. Additionally, take precautions to prevent the entry of foreign objects into the product.

编号 Number	紧固位置 Fastening position	推荐扭矩 Recommended torque
1	头部基座紧固螺钉 Head base fastening screw	0.5~0.7N·m
2	转轴螺母 Shaft nut	0.5~0.7N·m
3	基座盖紧固螺钉 Base cover fastening screw	0.5~0.7N·m
4	接地紧固螺钉 Ground fastening screw	0.5~0.7N·m
5	触点模块紧固螺钉 Contact module fastening screw	0.5~0.7N·m
6	螺钉帽 Screw cap	1.3~1.7N·m
7	连接器螺纹孔 Connector threaded hole	1.8~2.2N·m



微小负载型的使用 Applications Under Minimal Load

开关接点可用于一般负载或微小负载。但是，已经连接过一般负载的接点，就不能用于连接更小容量的负载。否则，可能导致接触面的糙化，而且可能失去接触可靠性。

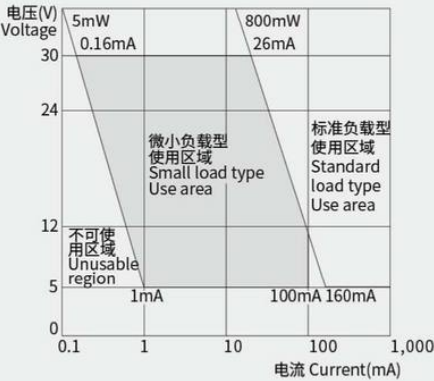
如果在开关微小负载电路时使用一般负载用开关，可能会引起接触不良。下图为开关负载区域范围定义。本目录册内产品适用于 DC24V 10mA 以上范围，当使用负载小于 DC24V 10mA 以下时，可能存在由于电流过小无法击破触点表面氧化膜或硫化膜的现象，从而导致开关接触不良。所以当使用负载小于 DC24V 10mA 以下时，请咨询昌得电气科技有限公司进行产品定制。

请设置 CR 电路等吸收电路，防止震荡和抖动所导致的噪声和脉冲缺失，对于开关时会产生冲击电流的负载，请插入接点保护电路，以免导致耐久性降低。

Switch contacts can be used for general loads or small loads. However, contacts that have already been connected to general loads cannot be used to connect smaller capacity loads. Otherwise, it may lead to roughness of the contact surface and loss of contact reliability.

If a general load switch is used when switching a small load circuit, poor contact may be caused. The following diagram shows the switching load area range definition. The products in this catalog are suitable for DC24V 10mA or above. When the load is less than DC24V 10mA or below, the oxidized film or vulcanized film on the contact surface may be unable to be broken due to too small current, resulting in poor switch contact. Therefore, when the load is less than DC24V 10mA, please consult CNTD Electrical Technology Co., Ltd. for product customization.

Please set the absorption circuit such as CR circuit to prevent noise and pulse loss caused by shock and jitter, for the load that will produce impulse current on the switch, please insert the contact protection circuit to avoid reducing durability.



使用注意事项 Using Precautions

本公司产品是作为工业产品而设计生产，严格遵守工业产品标准。我司明确声明，除非经过特殊设计并得到我司明确书面确认，我司产品不适用于以下应用场合：

- 要求极高可靠性的应用场合，包括核能、燃气、电力等要求长期稳定运行的系统。
- 要求极高安全性的应用场合，涉及人身安全与财产的情况。
- 苛刻条件、严酷环境的应用场合，包括室外、存在化学污染、电磁、振动或冲击影响的环境。
- 有火灾或爆炸风险的应用场合，包括存在易燃易爆性气体、强酸强碱化学品等物质的环境。
- 涉及军工用途、航天航空项目的应用场合。

The company's products are designed and produced as industrial products, in strict compliance with industrial product standards. We expressly declare that, unless specifically designed and expressly confirmed by us in writing, our products are not intended for the following applications:

- Applications that require high reliability, including nuclear, gas, electric and other systems that require long-term stable operation.
- Applications requiring very high security, situations involving personal safety and property.
- Applications in harsh conditions, harsh environments, including outdoor, chemical contamination, electromagnetic, vibration or shock effects.
- Applications where there is a risk of fire or explosion, including environments where flammable and explosive gases, strong acids and alkali chemicals are present.
- Applications involving military use and aerospace projects.