

**Aotoro®**

**TU** Groove shape type槽型


INSTRUCTION MANUAL  
使用说明书


PROXIMITY SWITCH  
接近开关



A2302-05

**Model selectable 型号选择**

Appearance 外形	slot width 槽宽	OUTPUT	Model 型号
	5mm	NPN NO	TU30-5DN
		NPN NC	TU30-5DN2
		PNP NO	TU30-5DP
		PNP NC	TU30-5DP2
		NO(DC 2wire)	TU30-5DO
		NC(DC 2wire)	TU30-5DC

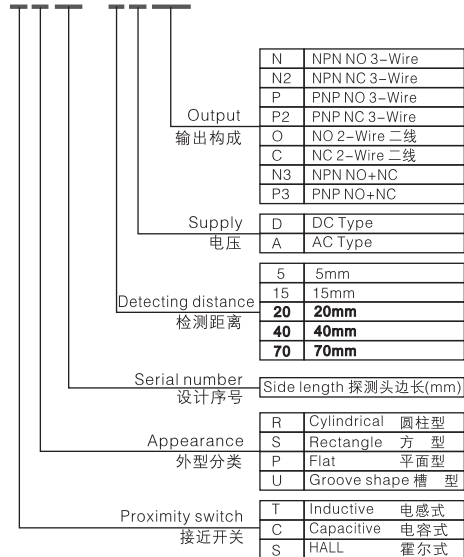
Appearance 外形	slot width 槽宽	OUTPUT	Model 型号
	10mm	NPN NO	TU45-10DN
		NPN NC	TU45-10DN2
		PNP NO	TU45-10DP
		PNP NC	TU45-10DP2
		NO (AC type)	TU45-10AO
		NC (AC type)	TU45-10AC

**Specification 规格**

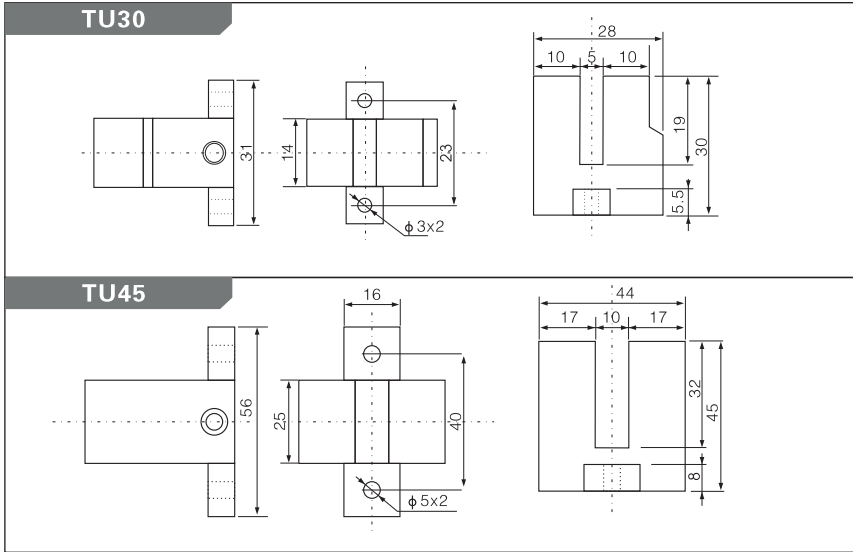
Model 型号	TU30-5DN TU30-5DN2 TU30-5DP TU30-5DP2	TU45-10DN TU45-10DN2 TU45-10DP TU45-10DP2	TU30-5DO TU30-5DC	TU45-10AO TU45-10AC
Detecting distance 探测距离	5mm ± 10%	10mm ± 10%	5mm ± 10%	10mm ± 10%
Setting distance 设定距离	0 to 3.5mm	0 to 7mm	0 to 3.5mm	0 to 7mm
Standard Detecting target 标准探测体	Iron 18x18x1mm(铁)	Iron 30x30x1mm(铁)	Iron 18x18x1mm(铁)	Iron 30x30x1mm(铁)
Hysteresis 回差	Max.10% of detecting distance (检测距离的10%以下)			
Power supply 电源电压	12-24VDC(10-30VDC)		12-30VDC	90-250VAC
Current consumption 静态电流	Max.10mA		Max.0.9mA	Max.2.2mA
Response frequency 频率	300HZ	200HZ	300HZ	20HZ
Residual voltage 残留电压	Max.1.5V		Max.6V	Max.10V
Control output 控制输出	Max.200mA		Max.100mA	Max.200mA
Protection circuit 电路保护	Reverse polarity protection反极性保护, Surge absorber浪涌保护			
Insulation resistance 绝缘	Min.50MΩ ( 500VDC )			
Dielectric strength 耐电压	1500VAC 50/60HZ for 1 minute			
Operating temperature 使用环境温度	-25 to +70°C (non-freezing condition 不结冰)			
Protection 保护结构	IP67 (IEC Specification)			

**Ordering information 订购信息**

**TU30-5DN2**

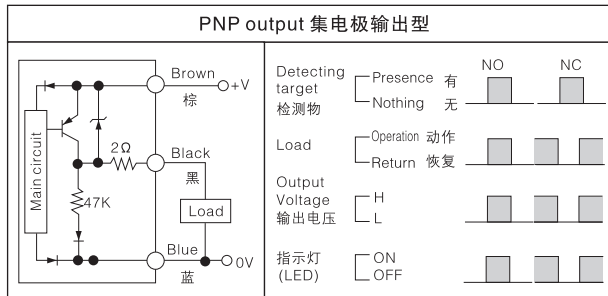
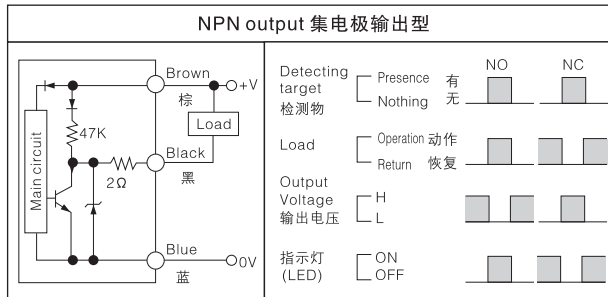


## Dimensions 尺寸(unit:mm)

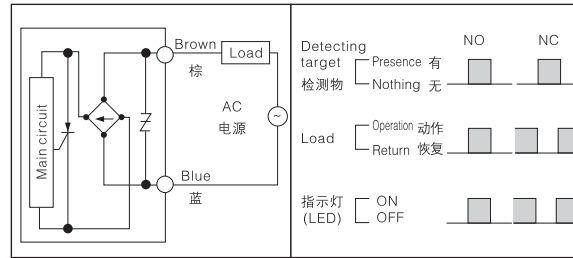


## Control output diagram 控制输出图

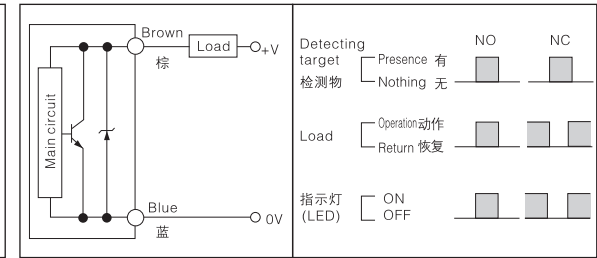
### DC 3-wire(三线型)



### AC 2-wire(二线型)



### DC 2-wire(二线型)



## Precautions in using the product 使用注意事项

### NOTE 注意

Be sure to follow the safety precautions below for added safety  
以下项目在安全确保方面非常重要,请务必遵守。

- Do not use the sensor under the explosive or flammable gas environment. 请不要在具有可燃性、爆炸性气体的环境下使用。
- Never disassemble, repair or tamper the product. 请勿拆卸、修理、改造本产品。
- Keep the supply voltage within the specified area. 电源电压必须在额定值内。
- use the load under the specified area. 请使用额定值以下的负荷。

### Caution for using 正确使用方法

- Do not use the product under the following conditions. 请不要在以下的环境中使用。
  - In the place of the direct sunlight. 日光直射场所。
  - In the place where humidity is high and condensation may occur. 湿度高或易结露场所。
  - In the place of the corrosive gas exists. 含腐蚀性气体场所。
  - In the place where vibration or shock is directly transmitted to the product. 振动或冲击能直接传送到传感器场所。
- Connection and Mounting 连接和安装
  - Be sure that before giving the power, the supply voltage is less than the maximum rated supply voltage. 通电前请确认供电电源电压小于最大允许电源电压。
  - There are some cases where the sensors cable is unavoidably laid in a tube or duct together with a high tension or power line. This causes an induction, possibly resulting in malfunction or damage. In principal, the cable should be separately laid or shielded. 传感器导线和动力线或电力线装在同一配管中使用,会受到干扰,有动作甚至被损坏。原则上传感器导线必须单独放置或者被屏蔽。
  - For extending wires, whose cross section is greater than 0.3sqmm and the length less than 100m. 延长导线必须使用截面积0.3mm<sup>2</sup>以上、长度100m以下导线。
  - Do not pull wire strongly. 导线请勿用力拉扯。
  - Excessive force (hitting by hammer, etc.) Should not be put on the sensors because it may damage its water-resistance. 安装传感器时,请勿使传感器受剧烈外力(如用锤击打等),这样就有可能破坏传感器防水保护性能。
- Power supply 电源
 

When using a commercially available switching regulator, be sure to ground the FG(Frame Ground) terminals. 使用市场上销售的开关整流器时,请将FG(Frame Ground)端子接地。
- Power supply reset time 电源重新调整时间

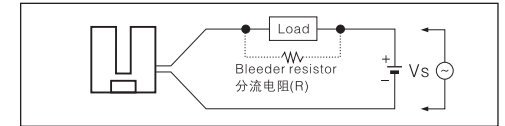
The sensors will begin sensing no later than 100ms after the power is turned on. If the load and the sensors connected to different power supply, the sensors must be always turned on first. 从接通电源到传感器可正常进行检出的时间是100ms后再使用。负载和传感器接不同电源时,一定要先接通传感器的电源

5. Turning off the power supply 电源关闭  
When turning off the power, output pulse may be generated. We recommend turning off the power supply of the load or load line first. 电源关闭时,可能会出现输出脉冲,所以我们建议先关闭负载或负载线的电源

### 6. AC 2-wire type & DC 2-wire type

交流二线和直流二线型

- The load must be connected otherwise internal components may be damaged, And the load can be connected to tother wire. 接线时需将负载串接到其中任意一根连接线,否则传感器会短路爆裂。
- In case of the load current is small: connect the bleeder resistor to load parallel. as following picture shows: 如果负载电流过小: 负载的残余电压会使传感器失灵, 请确保残余电压要小于启动电压, 可以安装一个与负载并联的分流电阻, 如图所示:



$$R \leq \frac{V_s}{I_o - I_{off}} \text{ (k}\Omega\text{)}$$

$V_s$ : power supply 电源  
 $P$ : Bleeder resistor, number of W 分流电阻功率  
 $I_o$ : Min. operating current of proximity switch 接近开关的最小动作电流

$$P > \frac{V_s^2}{R} \text{ (mW)}$$

$I_{off}$ : Return current of load 负载的恢复电流

\* 110VAC 50/60HZ, bleeder resistor over 20K, Min. 3W  
220VAC 50/60HZ, bleeder resistor over 39K, Min. 5W

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