

**Aotoro®**

**TRD** Long Sensing Distance and Cylindrical 远距离—圆柱型

**INSTRUCTION MANUAL**

**使用说明书**

**PROXIMITY SWITCH**  
接近开关

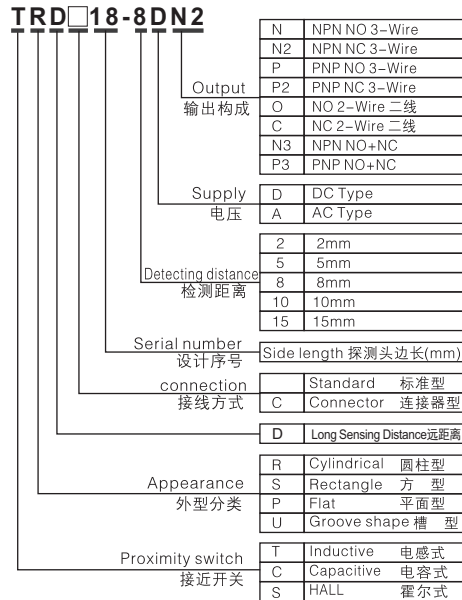


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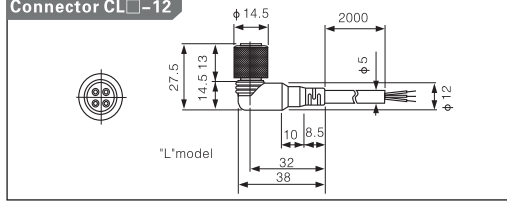
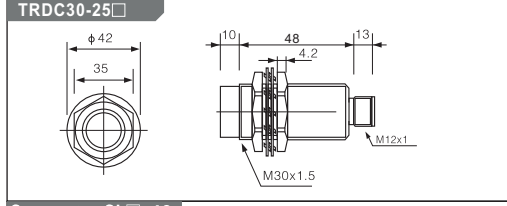
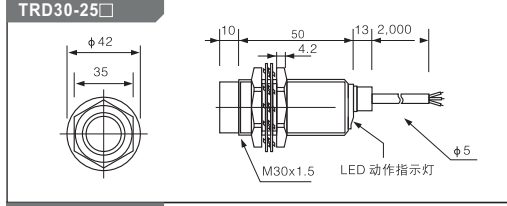
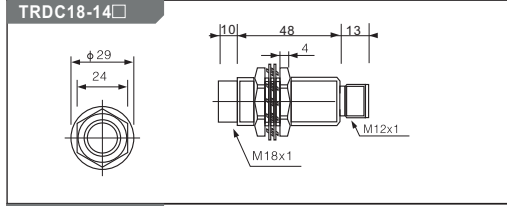
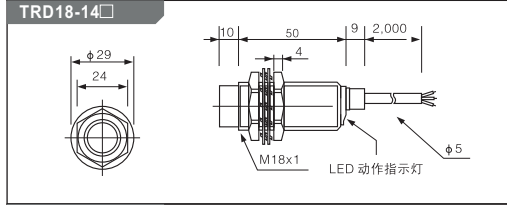
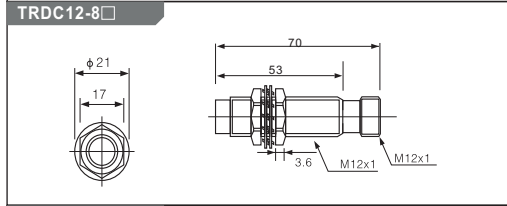
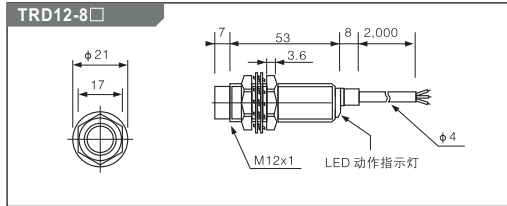
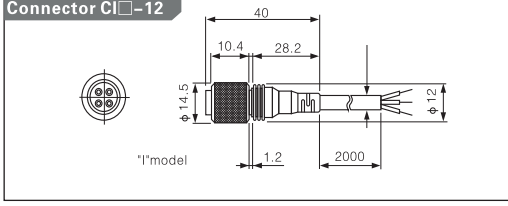
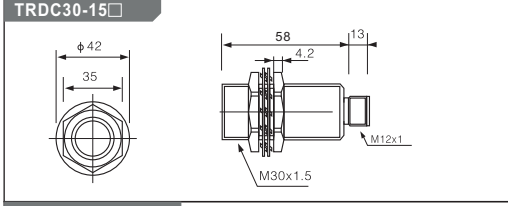
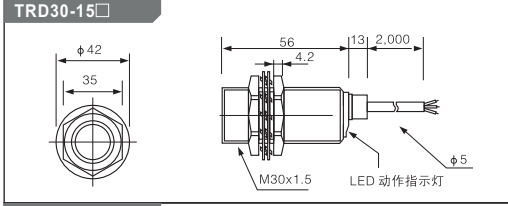
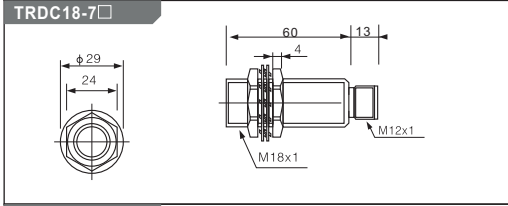
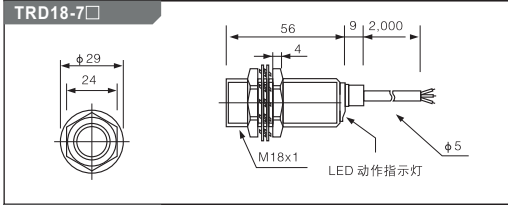
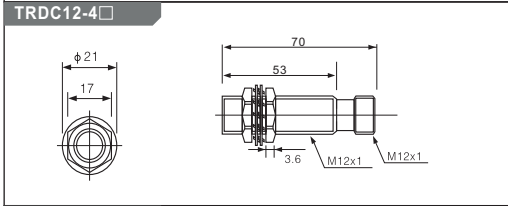
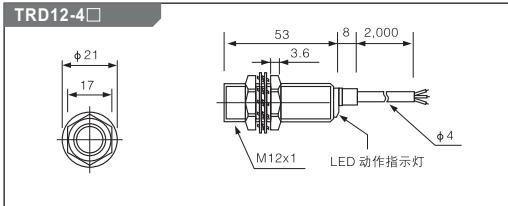
**Specification 规格**

Model 型号	Standard 标准型	DC三线 3-wire	TRD12-4DN TRD12-4DN2 TRD12-4DP TRD12-4DP2	TRD12-8DN TRD12-8DN2 TRD12-8DP TRD12-8DP2	TRD18-7DN TRD18-7DN2 TRD18-7DP TRD18-7DP2	TRD18-14DN TRD18-14DN2 TRD18-14DP TRD18-14DP2	TRD30-15DN TRD30-15DN2 TRD30-15DP TRD30-15DP2	TRD30-25DN TRD30-25DN2 TRD30-25DP TRD30-25DP2
		DC二线 2-wire	TRD12-4DO TRD12-4DC	TRD12-8DO TRD12-8DC	TRD18-7DO TRD18-7DC	TRD18-14DO TRD18-14DC	TRD30-15DO TRD30-15DC	TRD30-25DO TRD30-25DC
	Connector 连接器型	DC三线 3-wire	TRDC12-4DN TRDC12-4DN2 TRDC12-4DP TRDC12-4DP2	TRDC12-8DN TRDC12-8DN2 TRDC12-8DP TRDC12-8DP2	TRDC18-7DN TRDC18-7DN2 TRDC18-7DP TRDC18-7DP2	TRDC18-14DN TRDC18-14DN2 TRDC18-14DP TRDC18-14DP2	TRDC30-15DN TRDC30-15DN2 TRDC30-15DP TRDC30-15DP2	TRD30-25DN TRD30-25DN2 TRD30-25DP TRD30-25DP2
		DC二线 2-wire	TRDC12-4DO TRDC12-4DC	TRDC12-8DO TRDC12-8DC	TRDC18-7DO TRDC18-7DC	TRDC18-14DO TRDC18-14DC	TRDC30-15DO TRDC30-15DC	TRD30-25DO TRD30-25DC
Detecting distance 探测距离			4mm±10%	8mm±10%	7mm±10%	14mm±10%	15mm±10%	25mm±10%
Setting distance 设定距离			0 to 2.8mm	0 to 5.6mm	0 to 4.9mm	0 to 9.8mm	0 to 10.5mm	0 to 17.5mm
Standard Detecting target 标准探测体			Iron 12x12x1mm(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)					
Current consumption 静态电流			DC3-wire type (三线型) : Max. 10mA DC2-wire type (二线型) : Max. 0.8mA					
Response frequency 频率			400HZ	300HZ	300HZ	200HZ	100HZ	100HZ
Residual voltage 残留电压			DC3-wire type (三线型) : Max. 1.5VDC DC2-wire type (二线型) : Max. 3.5VDC					
Control output 控制输出			DC3-wire type (三线型) : Max. 200mA DC2-wire type (二线型) : Max. 100mA					
Protection circuit 电路保护			Reverse polarity protection 反极性保护, Surge absorber浪涌保护, Short circuit protection短路保护: M12 M18 M30 DC3-wire type					
Indicator 指示灯			Power supply indicator 电源指示: Green LED, Operating indicator 动作指示: Red LED					
Insulation resistance 绝缘阻抗			Min.50MΩ (500VDC)					
Dielectric strength 耐电压			1500VAC 50/60HZ for 1 minute					
Vibration 抗振动			1 mm amplitude at frequency of 10 to55HZ in each of X, Y, Z directions for 2 hours					
Shock 抗冲击			500m/s <sup>2</sup> (50G) X, Y, Z directions for 3times					
Operating temperature 使用环境温度			-25 to +70°C (non-freezing condition 不结冰)					
Ambient humidity 使用环境湿度			35 to 95% RH					
Protection 保护结构			IP67 (IEC Specification)					
Material 材料			Case:brass, Detecting surface:ABS 壳体:黄铜,检测面:ABS					

**Ordering information 订购信息**

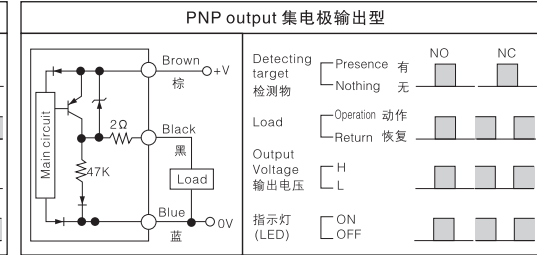
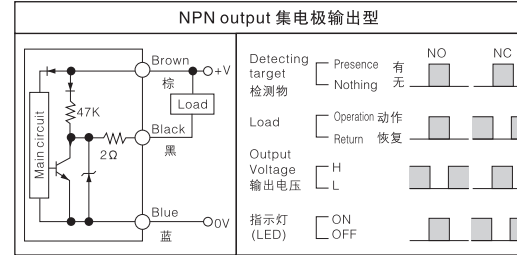


# Dimensions 尺寸(unit:mm)

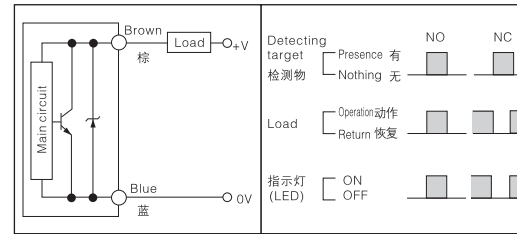


# Control output diagram 控制输出图

## DC 3-wire(三线型)



## 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 adder 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. 请勿在具有可燃性、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. 请勿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 hightension 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时,会受到干扰,有误动作甚至被损坏。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
 

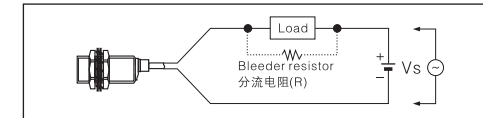
When using a commercially available switching regulator, be sure to ground the FG(Frame Ground) terminals. 使用市场上销售的开关整流器时,请将FG(Frame Ground)端子接地。
- Power supply reset time 电源重新调整时间

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:



$R \leq \frac{V_s}{I_o - I_{off}}$  (k $\Omega$ )  
 $P > \frac{V_s^2}{R}$  (mW)  
 $V_s$ : 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  
 $I_{off}$ : 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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