

色标传感器SPM系列

使用说明书



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注意事项

- 通电前请确保电源电压在额定电压范围内
- 传感器接通电源后100ms后方可正常检测
- 传感器与负载使用不同电源时，请确保先接通传感器的电源
- 不使用传感器时，建议优先切断负载上的电源，再切断传感器的电源
- 安装时请勿使传感器受剧烈外力（如锤击打等），以免破坏传感器性能
- 清洗时避免使用稀释剂、酒精或其他有机溶剂

安全警告

- 请勿在具有易燃性、爆炸性或腐蚀性气体的环境下使用
- 请勿在具有油或化学品的环境下使用
- 请勿在湿度高的环境下使用
- 请勿在日光直射的环境下使用
- 请勿在其他超过额定值的环境条件下使用
- 请勿擅自拆卸、维修、改造本产品

报废处理

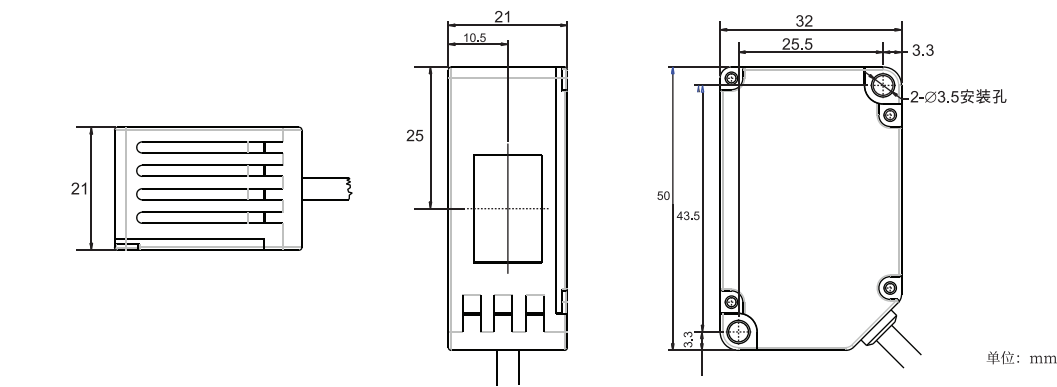
- 产品报废时，请作为工业废弃物进行处理

■ 产品规格

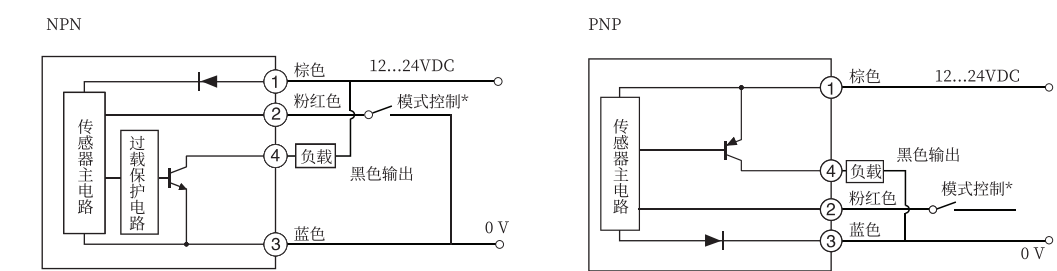
类型	NPN		PNP
型号	SPM-TNR-RGB		SPM-TPR-RGB
检测距离	18...28mm		
电源电压	24VDC±10% 纹波（P-P）： <10%		
光源类型	复合 LED：红色/绿色/蓝色（光源波长: 640nm/525nm/470mm）		
消耗电流	功率<850mW（电源电压24V时、消耗电流<35mA）		
模式切换输入	色标模式：Low（ON）0...0.6VDC；漏电流<0.5mA；输入阻抗约10kΩ； 彩色模式：High（OFF）12...+VDC或开放		色标模式：Low（OFF）0...0.6VDC或开放； 彩色模式：High（ON）12...+VDC；漏电流<3mA；输入阻抗约10kΩ
输出方式	NPN开路集电极晶体管：最大流入电流50mA；外加电压 30VDC 以下（输出和0V之间）；剩余电压1.5V以下（流入电流50mA时）*		PNP开路集电极晶体管：最大流入电流50mA；外加电压 30VDC 以下（输出和+V之间）；剩余电压1.5V以下（流出电流50mA时）*
输出操作	色标模式：色标检测时ON；彩色模式：一致时ON		
保护回路	短路保护		
响应时间	<200μs		
环境温度	-10...55℃（无凝霜、无凝露）		
环境湿度	35...85%RH（无凝结）		
外壳材质	外壳：PBT；操作面板：PC；操作按钮：硅胶；透镜：PC		
连接方式	2m 电缆（0.2mm ² 4芯电缆）		
重量	约104g		

*指定的测量条件：周围使用温度+23℃

■ 外形尺寸图



■ 电气接线图



*注：粉红色线断开（OFF）时为彩色模式；粉红色线接通（ON）时为色标模式

■ 操作设定示教方式

- 在进行教导设定之前，先要确认色标模式或彩色模式的设定。
“COLOR”绿色指示灯常亮为彩色模式，熄灭为色标模式。



- 两点示教设定方式
①传感器所投射光对着被测色按下“ON”按键，“GOOD”绿色指示灯闪烁。
②传感器所投射光对着背景色按下“OFF”按键。
③在步骤①和②之间所设定的阈值能稳定检测时“GOOD”绿色指示灯常亮，表示能正常开始检测了。
在步骤①和②之间所设定的阈值不能稳定检测时“ERR”红色指示灯闪烁3秒后恢复到上次设定状态。

- 阈值回差调节
①按下“ON”按键大于5秒直至ERR、GOOD、COLOR三个指示灯同时闪烁。
②按下“OFF”按键调节回差值大小。

回差状态与指示灯闪烁的关系如下：

状态	指示灯	三个指示灯闪烁状态
回差值小	○ ○ ●	仅COLOR指示灯闪烁
回差值中	○ ● ●	GOOD、COLOR两个指示灯同时闪烁
回差值大	● ● ●	ERR、GOOD、COLOR三个指示灯同时闪烁

- 退出阈值回差调节
在阈值回差调节情况下，按下“ON”按键大于5秒直至ERR、GOOD、COLOR三个指示灯停止闪烁常亮，即退出阈值回差调节。

■ 关于错误信息提示

出现错误信息时，按如下方法来处理。

指示灯状态	“ERR”红色指示常亮，不会自动熄灭
错误信息内容	输出线负荷发生了短路，过电流通过
处理	关闭电源后，检查输出线负荷

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Precautions

- Please make sure that the power supply voltage is within the rated value before powering on
- The sensor can be detected normally until 100ms after the power is turned on
- When using different power sources for the sensor and load, be sure to turn on the power of the sensor first
- When the sensor is not used, it is recommended to cut off the power of the load first and then turn off the power of the sensor
- Do not subject the sensor to severe external forces (such as hammer hits, etc.) during installation, so as not to damage the sensor performance
- Avoid using thinner, alcohol or other organic solvents when cleaning

Safety Warning

- Do not use in an environment with flammable, explosive or corrosive gases
- Do not use in oil or chemical environments
- Do not use in a high humidity environment
- Do not use in direct sunlight
- Do not use in other environmental conditions that exceed the rated value
- Do not disassemble, repair or modify this product without authorization

Scrap Treatment

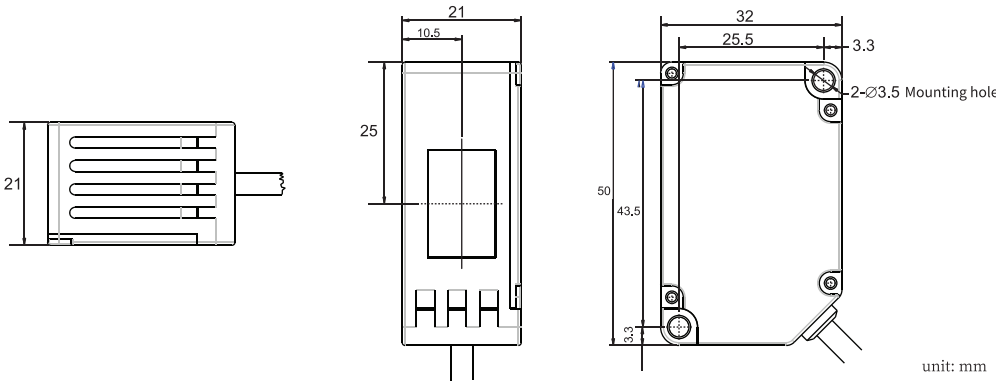
- When the product is scrapped, please dispose of it as industrial waste

Technical specifications

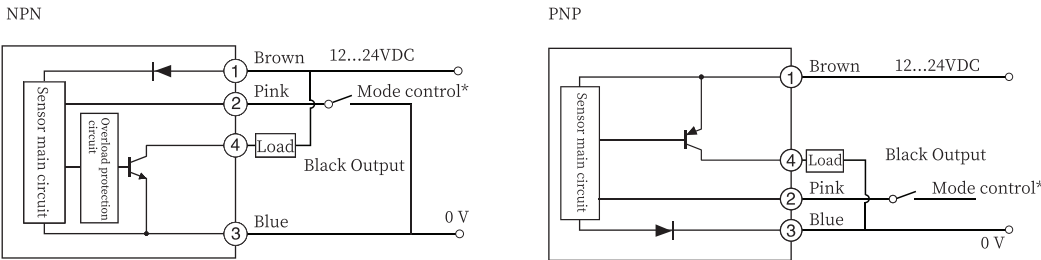
Type	NPN	PNP
Model	SPM-TNR-RGB	SPM-TPR-RGB
Detection distance	18...28mm	
Supply voltage	24VDC±10% Ripple(P-P):<10%	
Light source	Composite LED:Red/Green/Blue(Lightsource wave length:640nm/525nm/470mm)	
Consumption current	Power<850mW(Supply voltage is 24V,Consumption current<35mA)	
Mode switch input	Color mark mode:Low(ON)0 to 0.6VDC;Leakage current is below 0.5mA;Input impedance is about 10kΩ; Color mode:High(OFF)12 to +VDC or open	Color mark mode:Low(OFF)0 to 0.6VDC or open; Color mode:High(ON)12 to +VDC;Leakage current is below 3mA;Input impedance is about 10kΩ.
Output type	NPN open-collector transistor:the max input current is 50mA;The applied voltage is below 30VDC(Between output and 0V);Residual voltage is less than 1.5V(When input current is 50mA)*	PNP open-collector transistor:the max input current is 50mA;The applied voltage is below 30VDC(Between output and +V);Residual voltage is less than 1.5V(When input current is 50mA)*
Output operation	Color mark mode:ON when color mark detection;Color mode:ON when consistent	
Circuit protection	Short circuit protection	
Response time	<200μs	
Ambient temperature	-10...55℃(No frost、No condensation)	
Environment humidity	35...85%RH(No condensation)	
Housing material	Housing:PBT; Operation panel:PC; Operation button:Silica gel; Lens:PC	
Connection	2m cable(0.2mm ² 4-pin cable)	
Weight	About 104g	

*Specified measurement conditions: ambient temperature +23°C

Dimensions



Wiring diagram



*Note:When the pink line is disconnected(OFF), it's color mode;When the pink line is connected(ON), it's color mark mode.

Operation setting teaching method

- Before performing teaching settings, confirm the color mark mode or color mode settings first. "COLOR" green indicator light is always on for color mode, and off for color mark mode.



Two-point teaching setting method

- ① The light projected by the sensor presses the "ON" button against the color to be measured, and the "GOOD" green indicator light flashes.
- ② The light projected by the sensor presses the "OFF" button against the background color.
- ③ When the threshold value set between steps ① and ② can be detected stably, the green indicator light of "GOOD" is always on, indicating that the detection can be started normally. When the threshold value set between steps ① and ② cannot be detected stably, "ERR" red indicator flashes for 3 seconds and then returns to the last setting state.

Threshold hysteresis adjustment

- ① Press the "ON" button for more than 5 seconds until the ERR, GOOD, COLOR indicators flash simultaneously.
- ② Press the "OFF" button to adjust the return difference.

The relationship between hysteresis status and indicator flashing is as follows:

Status	Indicator			Three indicator lights flashing state
Hysteresis value small	○	○	●	Only COLOR indicator light flashing
Hysteresis value medium	○	●	●	GOOD、COLOR Two indicators flashing at the same time
Hysteresis value large	●	●	●	ERR、GOOD、COLOR Three indicators flashing at the same time

Exit from threshold hysteresis adjustment

In the case of threshold hysteresis adjustment, press the ONbutton for more than 5 seconds until the ERR, GOOD、COLOR three indicators stop flashing , that is exit from the threshold hysteresis adjustment.

About the error message

When an error message appears, handle it as follows

Indicator Status	"ERR" The red indicator is always on and will not go out automatically
Error message content	The load on the output line is short-circuited and overcurrent flows
deal with	After turning off the power,check the load of output

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This specification doesn't relate to patent responsibility.Moreover, our company is always devoting to improving product quality, and reserves the right to improve products by changing pattern or size without prior notice.We have considered all the notes when compiling this specification, but for the wrong or clipped parts, and any loss caused by using this manual information, we bear no responsibility.

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