

**AOTORO®**

# EK50 继电器触点输出型

## Relay contact output type

### INSTRUCTION MANUAL

### 使用说明书

PHOTOELECTRIC SWITCH  
光电开关



A2302-09

## Specification 规格

Model 型号	Diffuse reflective type 直接反射型		Retroreflective type 反射板反射型		Through-beam type 对射型	
	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON
AC	EK50-DS30A1	EK50-DS30A2	EK50-R4A1	EK50-R4A2	EK50-5A1	EK50-5A2
DC	EK50-DS30D1	EK50-DS30D2	EK50-R4D1	EK50-R4D2	EK50-5D1	EK50-5D2
Free power	EK50-DS30M1	EK50-DS30M2	EK50-R4M1	EK50-R4M2	EK50-5M1	EK50-5M2
Detecting distance 探测距离	0~50cm		0~4m		0~5m	
Detecting target 探测物体	Transparent, Translucent, Opaque material 不透明体 半透明体, 透明体		Opaque materials of Min. $\phi$ 60mm 直径60mm以上不透明体		Opaque materials of Min. $\phi$ 15mm 直径15mm以上不透明体	
Hysteresis 回差	Max. 20% at detecting distance 不大于检测距离的20%					
Power supply 电源电压	AC type: 90~250VAC, DC type: 12~30VDC, Free power type: AC/DC 24~240V					
Power consumption 消耗功率	Max. 3VA					
Response time 响应时间	Max. 20ms					
Control output 控制输出	Relay contact output: 250VAC 2.5A of resistive load; Relay contact composition: 1C					
Light source 使用光源	Infrared LED 红外线		Red LED 红色 LED		Infrared LED 红外线	
Insulation resistance 绝缘	Min. 20M $\Omega$ (500VDC)					
Dielectric strength 耐电压	1500VAC 50/60HZ for 1 minute					
Ambient illumination 使用环境照度	Sunlight 太阳光 Max. 10,000 lx, Incandescent lamp 日光灯 Max. 3,000 lx					
Operating temperature 使用环境温度	-20 to 60°C (no-freezing condition 不结冰)					
Ambient humidity 使用环境湿度	35 to 85% RH					
Protection 保护结构	IP64					
Material 材质	Case, case cover (外壳壳盖): ABS, Lens (镜头): PC					
Cable 配线规格	$\phi$ 6 mm, 5P, Length 2m 长度					
Accessory 附件	Bracket 托架, Bolts/nuts 螺栓/螺母					

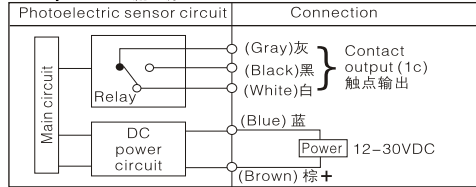
## Ordering information 订购信息

### EK50-DS30M1

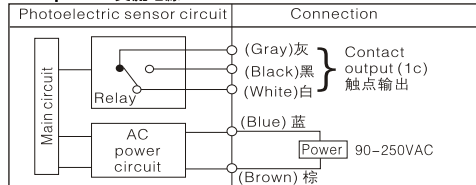
Output 输出状态	1	Light ON 入光 ON
	2	Dark ON 遮光 ON
	4	Selectable Light ON or Dark ON by control wire (可通过控制线选择入光或遮光 ON)
Output 输出构成	C	DC NPN output
	B	DC PNP output
	M	Free power relay output 自由电源触点输出型
	D	DC power relay output 直流电源触点输出型
	A	AC power relay output 交流电源触点输出型
	Z	AC 2-wire 交流电源二线控制型
Detecting distance 检测距离	30	30cm
	2	2m
	5	5m
Detecting type 传感方法	DS	Diffuse reflective 直接反射
	R	Retroreflective 反射板反射
		Through-beam 对射
Serial number 设计序号	50	Side length of head 探测头边长
Photoelectric switch 光电开关	EK	Relay contact output 触点输出型
	ER	Cylindrical type 圆柱型
	ED	DC univesal type 通用型
	EU	Groove shape type 槽型

## Control output diagram 控制输出图

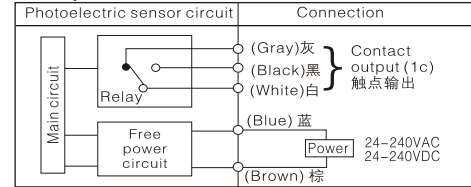
### ● DC power 直流电源



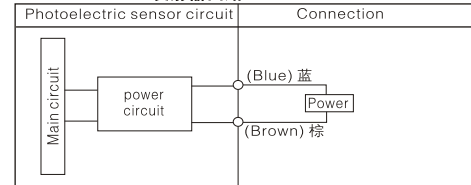
### ● AC power 交流电源



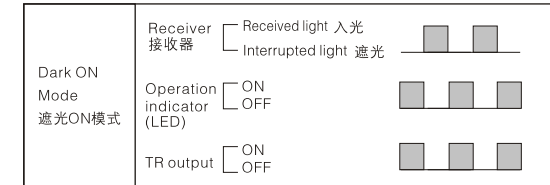
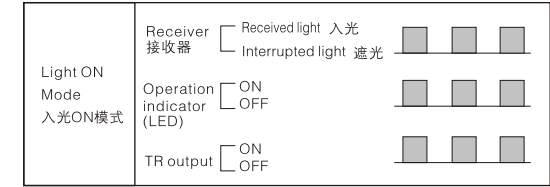
### ● Free power 自由电源



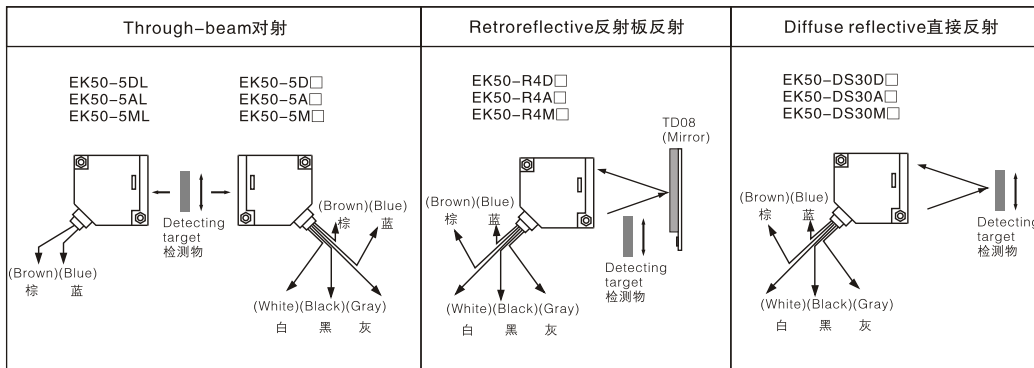
### ● Emitter circuit 发射器回路



## Operation mode 操作图解

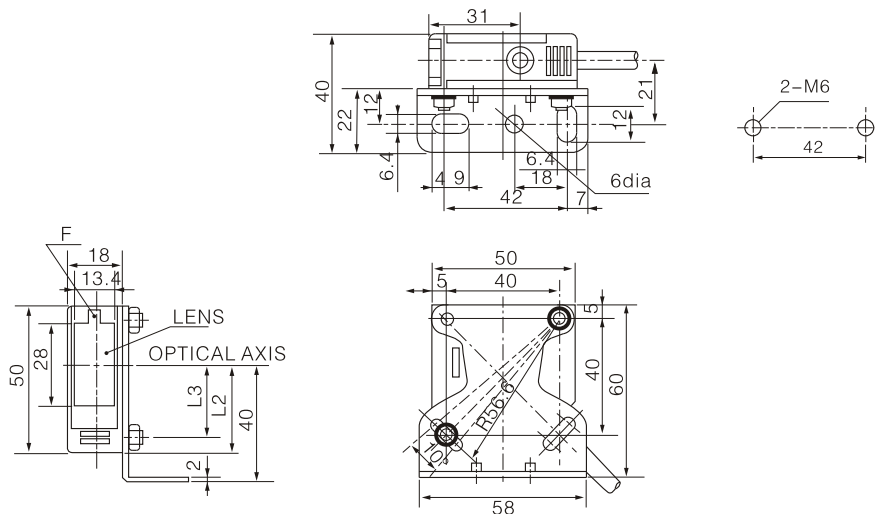


## Connections 连接图

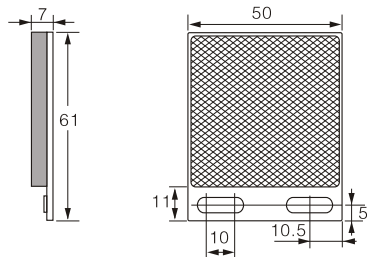


## Dimensions 尺寸(unit:mm)

### Product



### Mirror 反射板 TD08

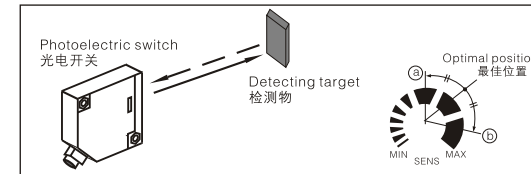


## Installation and sensitivity adjustment 安装及感光度调节

Please supply the power to the sensor after installing the emitter and the receiver in face to face, and then adjust an optical axis and the sensitivity as follow; 面对面安装好发射器和接收器后请给传感器提供电源, 然后按以下说明调整光轴及感光度

### Diffuse reflective type 直接反射型

- Even though the diffuse reflective type is set at max. sensitive position. The sensitivity of the sensor must be adjusted in accordance with the existence of the reflective material in background. 即使是直接反射型也要进行最大感光度的设置。传感器感光度的调节必须和反射材料的背景保持一致



- Set the target at a position to be detected by the beam, then turn the adjuster down to point ① where the indicator just turns on from Min. position of the adjuster. 安装检测物到可检测区域, 调节旋钮从最小位开始调节, 当调节到指示灯刚好亮时, 此时的旋钮位置为 ① 点
- Take the target out of the sensing area, then turn the adjuster until point ② where the indicator turns on. If the indicator does not turn on, Max. Position is point ③. 从感应区域拿开检测物, 调节到指示灯亮时, 此时的旋钮位置为 ②, 如果指示灯一直不亮, 那么旋钮的最大位置就是 ③ 的位置
- Set the adjuster at the center of two switching point ①, ②. ①, ② 两点中间位置就是最佳位

※ The detecting distance indicated in the specification chart is that of non-glossy white paper in the target size 100×100mm.  
※ 检测物是规定的100×100mm的白色无光泽纸

### Retroreflective 反射板反射

- Supply the power to the photoelectric sensor, after setting the photoelectric sensor and the mirror (TD-08) in face to face. 将发射器和反射板镜面对面安装, 并调节光轴位置和灵敏度后连接电源
- Set the photoelectric sensor in the position which indicator turns on, as adjusting the mirror or the sensor right and left, up and down. 调节反射板上下左右位置, 使传感器的指示灯变亮后固定

## 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 environment with explosive or ignition gas. 请不要在具有可燃性、爆炸性气体的环境下使用。
- Never disassemble, repair nor tamper with the product. 请勿拆卸、修理、改造本产品。
- Keep the supply voltage within the specified range. 电源电压必须在额定值内。
- Do not connect the load with big inrush current is over than the maximum rated inrush current. 请使用额定值以下的负荷。

### Caution for using 正确使用方法

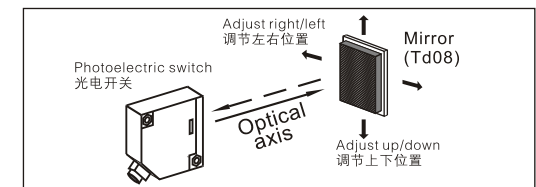
- Do not use the product under the following conditions. 请不要在以下的环境中使用。

- In the place exposed to 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 where 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 making supply 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 photoelectric switch 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, 会受到干扰,

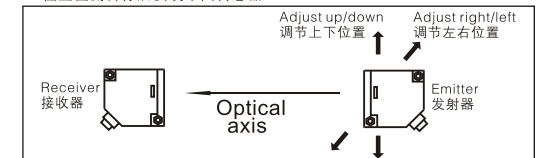
传感器导线和动力线或电力线装在同一配管中使用, 会受到干扰,



- Fix both units tightly after checking that the unit detects the target. 可靠安装两者后, 并校对使其检测到目标
- If use more than 2 photoelectric sensors in parallel, the space between them should be more than 30cm. 如果并行同时使用2个以上光电传感器, 那么它们的间距应大于30cm
- If reflectance of target is higher than non-glossy white paper, it might cause malfunction by reflection from the target when the target is near to photoelectric sensor. Therefore put enough space between the target and photoelectric sensor or the surface of target should be installed at an angle of 30 to 45 against optical axis. 如果被检测物体的反射率比反射板镜面的更高, 它会发生误动作。因此在传感器和被检测物体之间要留有足够的空间, 或者把被检测物体和光轴成30-45度的角度
- Sensitivity adjustment: Please see the diffuse reflective type. 灵敏度调节时请参考直接反射型

### Through-Beam type 对射型

- Supply the power to the photoelectric sensor, after installing the emitter and the receiver in face to race. 面对面的安装好发射器及接收器后请给传感器提供电源
- Set the receiver in center of position where indicator turns on, as adjusting the receiver and the emitter right and left, up and down. 调整接收器和发射器的上下左右位置, 在指示灯亮时, 在中心位置安装好接收器
- Fix both units tightly after checking that the units detect the target. 检查检测目标后安装牢固传感器



- 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, use a cable 0.3mm<sup>2</sup> min. and 100m max. In length. 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 photoelectric switch because it may damage its water-resistance characteristic. 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 photoelectric switch will begin sensing no later than 100ms after the power is turned on. If the load and the photoelectric switch connected to different power supply, the photoelectric switch 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

### 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

乐清市欧迪龙电子自动化有限公司

Yueqing Aotro Electric Automation CO., LTD.

ADD: Xiangshan Industrial Zone Liushi Town

Yueqing City Zhejiang China 325604

浙江省乐清市柳市镇象山工业区

TEL: 86-577-61758688 FAX: 86-577-62757002

Http://www.aotro.com E-mail: aotro@aotro.com