

OMRON

型 E3Z-□□□□ 光电传感器

使用说明书

- 感谢您选择欧姆龙产品。
使用时，请务必遵守以下内容。
- 由具备一定电气知识的人员使用。
 - 使用前，请仔细阅读本说明书，充分了解产品。
 - 为了您的方便，请妥善保管好本说明书。

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安全上的注意

●警告表示的意思



如果不正确使用本产品，有可能会引起轻度、中度人体伤害或者物质性的损害。

●警告表示



不可将传感器连接交流电源。
有爆裂的危险。



安全上的注意

以下项目在安全确保方面非常重要，请务必遵守。

- (1) 请不要在具有可燃性、爆炸性气体的环境下使用。
- (2) 请勿拆卸、修理、改造本产品。
- (3) 电源电压必须在额定值内（DC12~24V±10%）。
- (4) 请使用额定值以下的负荷。

安全上的要点

(1) 请勿在以下场所使用。

- ① 日光直射场所
- ② 湿度高或易结露场所
- ③ 含腐蚀性气体场所
- ④ 振动或冲击能直接传送到传感器场所

(2) 连接和安装

- ① 传感器最大允许电压是DC26.4V。通电前请确认供电电压小于最大允许电压。
- ② 传感器导线和动力线或电力线装在同一套管中使用时，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屏蔽。

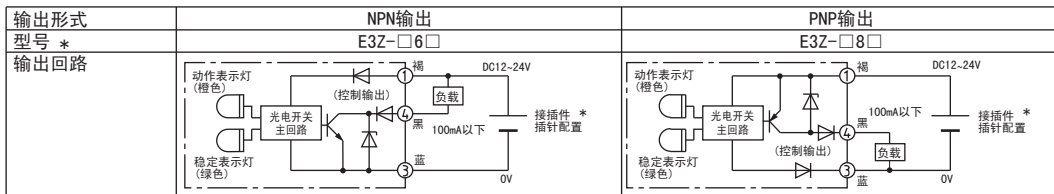
- ③ 延长导线必须使用截面积0.3mm²以上、长度100m以下导线。
将韩国S-mark认证機種作为认证品使用时请不要超过10m。
 - ④ 对导线部施加的力小于以下值。
拉伸80N以下、扭转0.1N·m以下、按压20N以下、弯曲3kg以下
 - ⑤ 安装传感器时，请勿使传感器受剧烈外力（如用锤子打等），这样就可能破坏传感器防水保护性能。安装时请使用M3螺栓固定。
- ◎M3连接器方面
- ⑥ 连接器的插拔必须在传感器电源切断的情况下进行。
 - ⑦ 插拔连接器时请务必手握连接器外壳。
 - ⑧ 固定具请务必用手旋紧。如使用钳子会造成损坏。
 - ⑨ 合适的扭矩为0.3-0.4N·m。如果扭矩不够，会失去防水保护功能，且会在有振动的情况下容易松动。
- (3) 清扫
因为稀释剂类会溶化产品表面，所以请避免使用。

规格性能

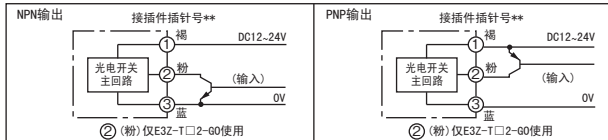
检测方式	对射型		回归反射型	透明瓶型		扩散反射型		细光束反射型	限定反射型		
机型	红外光源型		红色光源型								
型号	NPN	E3Z-T61/-T66 E3Z-T62/-T67	E3Z-T61A/-T66A	E3Z-R61/-R66	E3Z-B61/-B66	E3Z-B62/-B67	E3Z-D61/-D66	E3Z-D62/-D67	E3Z-L61/-L66	E3Z-L63/-L68	
*	PNP	E3Z-T81/-T86 E3Z-T82/-T87	E3Z-T81A/-T86A	E3Z-R81/-R86	E3Z-B81/-B86	E3Z-B82/-B87	E3Z-D81/-D86	E3Z-D82/-D87	E3Z-L81/-L86	E3Z-L83/-L88	
距离	15m 30m		10m	0.1~4m (E39-R1S使用时) 0.1~3m (E39-R1使用时)	0.08~0.5m (E39-R1S使用时) 0.1~2m (E39-R1使用时)	0.5~2m (E39-R1S使用时)	0.1m (白纸100×100mm)	1m (白纸300×300mm)	90±30mm (白纸100×100mm)	30±20mm (玻璃板100×100mm)	
指向角	投·受光器: 3~15°			2~10°							
光源 (发光波长)	红外光LED (870nm)			红色LED (660nm)			红外光LED (860nm)		红色LED (650nm)	红色LED (660nm)	
电源电压	DC12~24V±10% 波动 (p-p) 10%以下										
消费电流	投光器: 15mA以下 受光器: 20mA以下			30mA以下							
控制输出	负载电源电压DC26.4V以下，负载电流100mA以下，漏电流10μA以下，集电极开路输出 (NPN/PNP输出根据形式而不同) 入光时ON/逆光时ON开关闭锁										
输出残留电压	残留电压1V以下 (负载电流小于10mA)；残留电压2V以下 (负载电流小于10~100mA)										
响应时间 (包含动作·复位)	各1ms以下	各2ms以下		各1ms以下							
投光停止功能	输入		(仅E3Z-T□2-G0有)								
**	响应时间	0.5ms以下									
周围温度	*** 动作时: -25~+55℃、保存时: -40~+70℃ (但不结冰、结露)										
周围湿度	动作时: 湿度35~85%RH、保存时: 湿度35~95%RH (但不结冰、结露)										
保护构造	IEC60529规格: IP67										
材质	外壳	聚对苯二甲酸丁二醇酯 (PBT)									
	显示部	聚酯合橡胶									
	镜头	聚酯合橡胶		聚甲基丙烯酸甲酯 (PMMA)		聚酯合橡胶					

- * 接插件中继电器型号末尾加“-M□J”。E-CON接插件中继电器型号末尾加“-ECON”。
- ** <NPN> 投光OFF: 在OV短路或者1.5V以下 (流出电流1mA以下)、投光ON: 开放 (漏电流0.1mA以下)
<PNP> 投光OFF: +DC (电流正极) 短路或者+DC-1.5V以内 (吸入电流3mA以下)、投光ON: 开放 (漏电流0.1mA以下)
- *** E3Z-T66/T86/R66/R86动作时: -40~+55℃、E3Z-D66/D86/D67/D87动作时: -30~+55℃
但是，E3Z-R66/R86在-40~-25℃下的检出距离为0.1~3m (在E39-R1S使用时)、0.1~2m (在E39-R1使用时)。

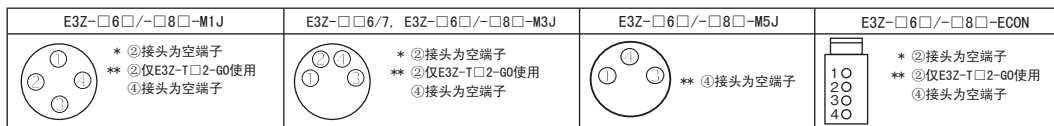
输出回路图



对射型的投光器



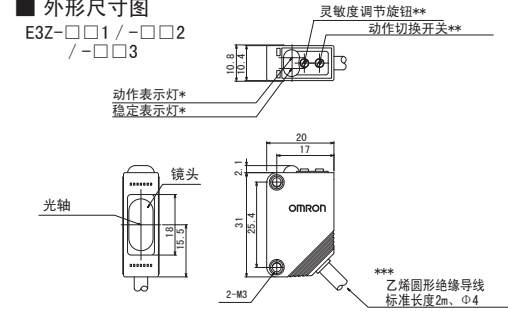
接插件插针配置 (E3Z-□□6/7, E3Z-□□6□/-□□8-M1J, E3Z-□□6□/-□□8-M3J, E3Z-□□6□/-□□8-M5J, E3Z-□□6□/-□□8-ECON)



- (4) 电源
使用市场上销售的开关整流器时，请将FG (Frame·Ground端子) 接地。
- (5) 电源重置时间
从接通电源到传感器可正常进行检出的时间是100ms，所以请在通电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。
- (6) 电源关闭
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。
- (7) 负载短路保护
本类传感器具有负载短路保护功能，请不要让负载短路。不要让高于额定电流通过负载。发生负载短路时输出变成OFF，请确认接线后再接通电源。短路保护回路会重置。另外，当回路中通过的电流为额定负载电流的1.8倍以上时，负载短路保护功能会启动。使用L负载时请确保通过的电流小于额定负载电流的1.8倍。
- (8) 耐水性
虽然防水等级为IP67，但最好避免在水中、雨中 and 室外使用。
- (9) 废弃时，请作为工业废弃物处理。

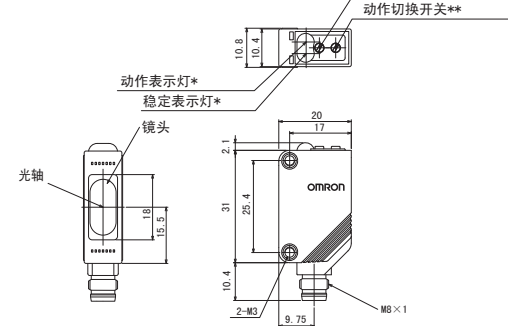
外形尺寸图

E3Z-□□□1/-□□□2 /-□□□3



- * 对射型投光器仅有电源表示灯。
** 对射型投光器没有灵敏度调节旋钮和动作切换开关，所以外形有所不同。
*** 请参考产品规格书。
E3Z-□□6□/-□□8-M1J, E3Z-□□6□/-□□8-M3J, E3Z-□□6□/-□□8-M5J, E3Z-□□6□/-□□8-ECON.

E3Z-□□□6 /-□□□7 /-□□□8



- * 对射型投光器仅有电源表示灯。
** 对射型投光器没有灵敏度调节旋钮和动作切换开关，所以外形有所不同。

使用时的承诺事项

- ① 为了确保安全，请勿将本产品直接或间接用于人体检测。需要使用该用途时，请选用本公司传感器综合样本中刊登的安全传感器。
 - ② 用于下列用途时，请与本公司营业担当商谈、并根据规格书等确认后，采用相对于额定性能留有一定余裕的使用方法或者采取即使出现故障也能使危险度降低到最小的安全电路的对策。
 - a) 屋外使用、用于有潜在的化学污染或者有电气妨害时，或者是产品手册、使用说明书等没有记载的条件或环境中使用时
 - b) 用于原子能控制设备、焚烧设备、铁路·航空·车辆设备、医疗设备、娱乐器械、安全装置以及按照行政机关或个别业界规定制造的设备时
 - c) 用于可能危及生命、财产的·机械·装置时
 - d) 用于煤气、水道、电力供给系统或者24小时连续运转系统等的高可靠性设备时
 - e) 用于其他，以上述a)~d)为基准，需要高度安全性的用途时
- * 上述内容是适用条件的一部分。请参阅本公司综合产品手册·数据等最新版商品目录、手册中记载的保证·免责事项内容后再使用。

制造商

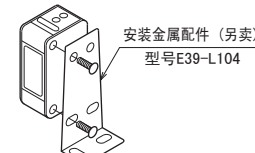
欧姆龙 (上海) 有限公司
地址: 中国上海市浦东新区金桥出口加工区金吉路789号
电话: (86) 21-5050-9988
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■ 技术咨询

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电话: (86) 21-5037-2222
技术咨询热线: 800-820-4535
网址: <http://www.fa.omron.com.cn>

■ 安装图

紧固扭矩请小于
0.5N·m



OMRON

Model E3Z-□□□□ PHOTOELECTRIC SENSOR

INSTRUCTION SHEET

Thank you for selecting OMRON product. This sheet primarily describes precautions required in installing and operating the product. Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.

TRACEABILITY INFORMATION:
Representative in EU: OMRON EUROPE B.V., Wegalaan 67-69, 2132 JD Hoofddorp, The Netherlands
Manufacturer: OMRON CORPORATION, Shiojiri Horikawa, Shimogyo-ku, Kyoto 600-8530 JAPAN
Shanghai Factory: No.789 Jinji Road, Jinqiao Export Processing District, Pudong New Area, Shanghai, 201206 CHINA

The following notice applies only to products that carry the CE mark:
NOTICE:
This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.

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PRECAUTIONS ON SAFETY

● Meaning of Signal Words

CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

● Alert statements

CAUTION

Do not connect sensor to AC power supply. Risk of explosion.



PRECAUTIONS FOR SAFE USE

Be sure to follow the safety precautions below for added safety.

- (1) Do not use the sensor under the environment with explosive or ignition gas.
- (2) Never disassemble, repair nor tamper with the product.
- (3) Keep the supply voltage within the specified range. (12 to 24V DC ± 10%)
- (4) Do not use the sensor over the rated values.

PRECAUTIONS FOR CORRECT USE

(1) Do not use the product under the following conditions.

- ① In the place exposed to the direct sunlight.
- ② In the place where humidity is high and condensation may occur.
- ③ In the place where corrosive gas exists.
- ④ In the place where vibration or shock is directly transmitted to the product.

(2) Connection and Mounting

- ① Be sure that before making supply the supply voltage is less than the maximum rated supply voltage. (26.4V DC)
- ② There are some cases where the photoelectric switch cable is unavoidably laid in a tube or duct together with a high-tension or power line.
- ③ For extending wires, use a cable 0.3mm² min. and 100m max. in length. When using the cable as a Korea's S-mark certified product, use the cable of less than 10m in length.
- ④ Do not exceed the following force values applied to the cable. Tensile: 80N max., torque: 0.1N·m max., pressure: 20N max., flexure: 3kg max.

- ⑤ Excessive force (hitting by hammer, etc.) should not be put on the photoelectric switch because it may damage its water-resistance characteristic. Use M3 screws to mount the photoelectric switch.
- ⑥ Plug in or out the connector after surely turning off a power supply.
- ⑦ Plug in or out the connector with a cover part of it.
- ⑧ Fasten a fixed implement by hand. If you use a plier, it may be cause of malfunction or damage to it.
- ⑨ Proper bolting torque is 0.3 to 0.4N·m to keep water-resistance.

(3) Cleaning

Do not use thinner such as alcohol and benzene because it may melt a surface of a product.

(4) Power supply

When using a commercially available switching regulator, be sure to ground the FG (Frame Ground) terminals.

(5) Power supply reset time

■ RATING PERFORMANCE

Detection system	Separate type		Retrereflective type	Transparency bottle made from PET type	Diffuse reflection type			Narrow beam type	Limited reflective type		
	Infrared beam type	Red beam type									
Function											
Type	NPN	E3Z-T61/T66	E3Z-T62/T67	E3Z-T61A/T66A	E3Z-R61/R66	E3Z-B61/B66	E3Z-B62/B67	E3Z-D61/D66	E3Z-D62/D67	E3Z-L61/L66	E3Z-L63/L68
*	PNP	E3Z-T81/T86	E3Z-T82/T87	E3Z-T81A/T86A	E3Z-R81/R86	E3Z-B81/B86	E3Z-B82/B87	E3Z-D81/D86	E3Z-D82/D87	E3Z-L81/L86	E3Z-L83/L88
Detecting distance		15m	30m	10m	0.1 to 4m (with E39-RIS) 0.1 to 3m (with E39-R1)	0.08 to 0.5m (with E39-RIS)	0.5 to 2m (with E39-RIS)	0.1m (white mat paper 100×100mm)	1m (white mat paper 300×300mm)	9±3mm (white mat paper 100×100mm)	30±20mm (glass plate 100×100mm)
Operating angle	Light source/Receiver: 3 to 15°			2 to 10°							
Light source (luminescence wavelength)	Infrared LED (870nm)			Red LED (660nm)			Infrared LED (860nm)		Red LED (650nm)		Red LED (660nm)
Supply voltage	12 to 24V DC ± 10% (Ripple (p-p) 10% max.)										
Current consumption	Light source: 15mA max. Receiver: 20mA max.			30mA max.							
Control output	Load supply voltage : 26.4V DC max. Load current : 100mA max. off-state current: 10µA max. Open collector output (NPN/PNP output, changing with forms) Light-ON/Dark-ON switch selectable										
Residual voltage	1V or less : Load current less than 10mA. 2V or less : Load current less than 10 to 100mA.										
Response time	1ms max.		2ms max.		1ms max.						
Emission stop function type	input	(E3Z-T□2 -GO only)									
**	Response time	0.5ms or less									
Ambient temperature	*** Operating : -25 to +55°C, Storage : -40 to +70°C (no freezing and condensation)										
Ambient humidity	Operating : 35 to 85%RH, Storage : 35 to 95%RH (no freezing and condensation)										
Protection structure	IEC60529 : IP67										
Materials	Case	Polybutylene Terephthalate resin (PBT)									
	Display	Denatured polyallylate									
	Lens	Denatured polyallylate			Methacrylate resin (PMMA)		Denatured polyallylate				

* "-M□J" are added at the end of type name in case of extension. And "-ECON" are added at the end of type name in case of extension.

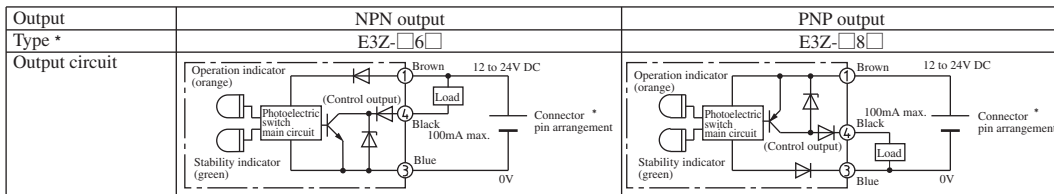
** <NPN output model> Emission stop : Connection to 0 to 1.5V DC (source current 0.1mA or less) Normal emission : Open (Leak current 0.1mA or less)

<PNP output model> Emission stop : Connection to Vs (supplied voltage) to Vs-1.5V DC (sink current 3mA or less) Normal emission : Open (Leak current 0.1mA or less)

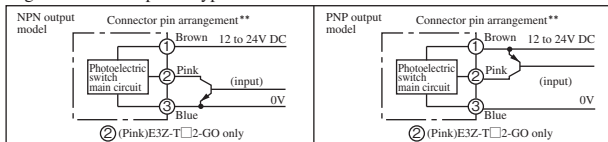
*** E3Z-T66/T86/R66/R86 Ambient temperature : -40 to +55°C, E3Z-D66/D86/D67/D87 Ambient temperature : -30 to +55°C

E3Z-R66/R86 Detecting distance at -40 to -25°C, 0.1 to 3m (with E39-RIS), 0.1 to 2m (with E39-R1)

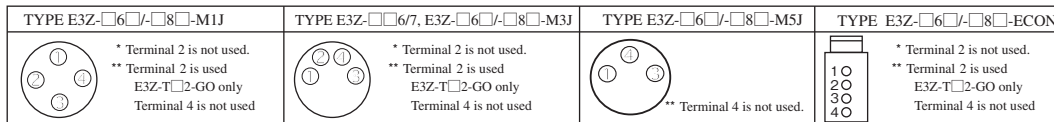
■ OUTPUT CIRCUIT DIAGRAM



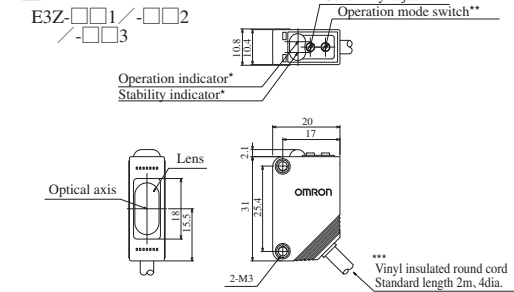
Light source of Separate type



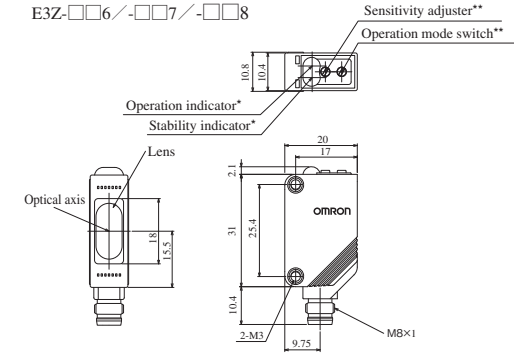
CONNECTOR PIN ARRANGEMENT (TYPE E3Z-□□6□/7, E3Z-□□6□/□8□-M1J, E3Z-□□6□/□8□-M3J, E3Z-□□6□/□8□-M5J, E3Z-□□6□/□8□-ECON)



■ DIMENSIONS



* Only power indicator is on a light source of Separate type.
** The form differs because a light source of Separate type does not have it.
*** Please refer to the product specification sheet
E3Z-□□6□/□8□-M1J, E3Z-□□6□/□8□-M3J, E3Z-□□6□/□8□-M5J, E3Z-□□6□/□8□-ECON.



* Only power indicator is on a light source of Separate type.
** The form differs because a light source of Separate type does not have it.

Suitability for use

THE PRODUCTS CONTAINED IN THIS SHEET ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's safety rated products.

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used. Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM. See also Product catalog for Warranty and Limitation of Liability.

- EUROPE: OMRON EUROPE B.V. Sensor Business Unit, Carl-Benz Str.4, D-71154 Nufringen Germany, Phone: 49-7032-811-0 Fax: 49-7032-811-199
- NORTH AMERICA: OMRON ELECTRONICS LLC, One Commerce Drive Schaumburg, IL 60173-5302 U.S.A., Phone: 1-847-843-7900 Fax: 1-847-843-7787
- ASIA-PACIFIC: OMRON ASIA PACIFIC PTE. LTD., No. 438A Alexandra Road #05-05-08(Lobby 2), Alexandra Technopark, Singapore 119967, Phone: 65-6835-3011 Fax: 65-6835-2711
- CHINA: OMRON(CHINA) CO., LTD., Room 2211, J Bank of China Tower, 200 Yin Cheng Zhong Road, PuDong New Area, Shanghai, 200120, China, Phone: 86-21-5037-2222 Fax: 86-21-5037-2200

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■ MOUNTING

Use tightening torque 0.5N·m max.

