

LASER

omron

型E3Z-L□□□

光电传感器
激光型

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。
- 使用本品前，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。

The following notice applies only to products that carry the CE mark:
Notice:
In a residential environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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安全上的注意

●警告表示的意思

⚠ 注意

如果不正确使用，有可能导致死亡或重大伤害。

●警告表示

⚠ 注意

不可将传感器连接交流电源。
有爆裂的危险。

安全上的要点

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载。

使用上的注意

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敷设或者屏蔽。
- ③延长导线必须使用截面积0.3mm²以上、长度100m以下导线。
- ④导线请勿用力拉扯。
- ⑤安装传感器时，请勿使传感器受剧烈外力（如用锤子打等），这样就有可能破坏传感器防水保护性能。安装时使用M3螺栓固定。

③M8连接器方面

- ①连接器的插接必须在传感器电源切断情况下进行。
- ②插接连接器时请握住传感器的外壳部位。
- ③一定要用手作为固定工具，如果用钳子拧会破坏产品。
- ④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，且会在有振动情况下容易松动。

④清扫

- ①因为稀释剂类会溶化产品表面，所以请避免使用。

⑤电源使用市场上销售的开关整流器时，请将F G（Frame Ground端子）接地。

⑥电源重置时间

- ①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。

⑦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。

⑧负载短路保护

- ①本类传感器具有负载短路保护功能，请勿将负载短路。勿使超过额定电流通过负载。发生负载短路时，输出会变成OFF，请对回路进行修正后再接通电源。短路保护回路也会重新调整。另外，当回路中通过1.8倍以上的额定负载电流时，负载短路保护功能也会动作。所以接L负载时确保通过的电流小于额定负载电流的1.8倍。

⑨耐水性

- ①虽然防水等级为IP67，但最好避免在水中、雨中和室外使用。

⑩废弃时，请作为工业废弃物处理。

有关激光安全

■使用上的注意

●使用上的注意

型号E3Z-L□□□放射的是可视激光。请勿直视。请将激光束的光路作为终端使用。终端材料请考虑使用反射少的抛光涂面，以使激光不影响到肉眼。如光路中有镜面反射体的话，则对于反射光路，请将光束围在内。必须将激光开放出来使用时，其光路请务必避开肉眼的高度。

●对于激光机器，国内外激光安全对策有所规定。以下分在国内使用和在国内组装出口海外两种情况进行简单说明。

(1)国内

- ①为了防止由于激光产品不同而有时会对使用者造成伤害，根据国际电气基准(IEC)，JIS C 6802:2014规定了「激光产品的放射安全规格」。型号E3Z-L□□□划分在该规格中的JIS规格CLASS 1里。
- ②美国搭载在机器上出口美国时，受到美国的安全规格FDA(food and Drug Administration)所规定。型号E3Z-L□□□划分在该规格中的1里。在美国使用搭载本产品的设备时，请在相关设备上粘贴FDA认证标签。

证明标签

This laser product complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed.3, as described in Laser Notice No.56, dated May 8, 2019.
OMRON Corporation
Shiohji Horioka Shimogyo-ku,
Kyoto 600-8530 JAPAN
Place of manufacture:
Shanghai Factory, OMRON Corp.
Manufactured in

外形尺寸图

E3Z-L□□1/□□□3

灵敏度调节旋钮**
动作切换开关**

动作显示灯*
安定显示灯*

镜头

光轴

20
17
2.1
3.1
25.4
2-M3

乙烯圆形绝缘导线
标准长度2m, 4d1a

*对射型投光器仅有电源表示灯

**对射型投光器没有感度调节旋钮和动作切换开关，所以外形有所不同。

5

Model E3Z-L□□□

PHOTOELECTRIC SENSOR
LASER TYPE

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: Manufacturer:
Omron Europe B.V. Omron Corporation
Weglaan 67-69 Shiohji Horioka, Shimogyo-ku,
2132 JD Hoofddorp, Kyoto 600-8530 JAPAN
The Netherlands Shanghai Factory
NO.789,Junli Road,
201206 China(Shanghai)Pilot Free Trade Zone

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.

●Warnings

⚠ CAUTION

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

E3Z-L□□6/□□□8

灵敏度调节旋钮**
动作切换开关**

动作显示灯*
安定显示灯*

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■规格性能

检出方式	对射型	回归反射型	距离设定型
型号	NPN 型E3Z-LT61/-LT66 PNP 型E3Z-LT81/-LT86	型E3Z-LR61/-LR66 型E3Z-LR81/-LR86	型E3Z-LL61/-LL66 型E3Z-LL81/-LL86 型E3Z-LL63/-LL68 型E3Z-LL83/-LL88
检出距离	60m	0.3~15m(型E39-R1使用时) 0.2~7m(型E39-R12使用时) 0.2~7m(型E39-R6使用时)	20~300mm(白纸□100mm) 20~160mm(黑纸□100mm) 25~100mm(黑纸□100mm)
设定距离范围	—	—	40~300mm(白纸□100mm) 40~160mm(黑纸□100mm) 40~100mm(黑纸□100mm)
应差距离 黑白误差	— —	— —	5%(距离160mm) 5%(距离100mm)
光源(发光波长)	JIS/IEC CLASS1, FDA CLASS 1 2mW以下	JIS/IEC CLASS1, FDA CLASS 1 1mW以下	JIS/IEC CLASS1, FDA CLASS 1 4.5mW以下
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 集电极开路输出 入光时ON 透光时ON开关切换式
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)
保护回路	—	—	电源逆接保护/负载短路保护/相互干涉防止功能/输出逆接保护/输出逆接保护
响应时间	—	—	动作·复归: 各1ms以下
周围温度	—	—	动作时: -10~+55℃、保存时: -25~+70℃(但不结冰、结露)
使用周围湿度	—	—	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	—	—	—
显示部	—	—	—
镜头部	—	—	—

■输出回路图

输出形式

型号

输出回路

NPN输出

型E3Z-L□□6□

动作显示灯(橙)

安定显示灯(绿)

控制输出

100mA以下

连接器PIN番号

②是空端子

DC12~24V

0V

PNP输出

型E3Z-L□□8□

动作显示灯(橙)

安定显示灯(绿)

控制输出

100mA以下

连接器PIN番号

②是空端子

DC12~24V

0V

对射型的投光器

连接器PIN番号

光电开关主回路

②是空端子

③是空端子

蓝

DC12~24V

0V

连接器PIN配置

型E3Z-L□□6/□□□8

1

2

3

4

■外形尺寸图

E3Z-L□□6/□□□8

灵敏度调节旋钮**
动作切换开关**

动作显示灯*
安定显示灯*

镜头

光轴

20
17
2.1
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乙烯圆形绝缘导线
标准长度2m, 4d1a

*对射型投光器仅有电源表示灯

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■安装图

扭矩应为0.5N·m以下

安装金属配件

型E39-L104

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. (12to24V 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.

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

(2)Connection and Mounting

- ①Be sure that before making supply the supply voltage is less than the maximum rated supply voltage. (26.4V DC)
- ②There are some cases where the photoelectric switch cable is unavoidably laid in a tube or duct together with a high-tension or power line.
- ③This causes an induction, possibly resulting in malfunction or damage.
- ④In principal, the cable should be separately laid or shielded. For extending wires, use a cable 0.3mm² min. and 100m max. in length.
- ⑤Do not pull the wire strongly.
- ⑥Excessive 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.

(3)Metal connector

- ①Plug in or out the connector after surly turning off a power supply.
- ②Plug in or out the connector with a cover part of it.
- ③Fasten a fixed implement by hand. If you use a plier, it may be cause of malfunction or damage to it.
- ④Proper bolting torque is 0.3 to 0.4N·m to keepwater-resistance.

(3)Cleaning

- ①Do not use thinner such as alcohol and benzine because it may melt a surface of a product.

(4)Power supply

- ①When using a commercially available switching regulator, be sure to ground the FG (Frame Ground) terminals.

(5)Power supply reset time

- ①The photoelectric switch will begin sensing no later than 100ms after the power is turned on. If the load and the photoelectric switch is connected to different power supply, the photoelectric switch must be always turned on first.

(6)Turning off the power supply

- ①When turning off the power, output pulse may be generated. We recommend turning off the power supply of the load or load line first.

(7)Load short circuit protection

- ①This product is provided with function of load short circuit protection. However, be never short-circuited of the load. Please do not throw the current that exceeds ratings into the load. Control output is turned off when this function operates. After checking of wiring and load current, make power supply again. Then the circuit is reset. Load short circuit protection operates when the current is 1.8 times over than the rated load current. The inrush current should be 1.8 times less than the rated load current when L load is used.

(8)Water resistance

- ①Though this is type IP67, do not use in the water, rain or outdoors.

(9)Pleace process it as industrial waste.

■OUTPUT CIRCUIT DIAGRAM

Output Type

Output circuit

NPN output

E3Z-L□□6□

Operation indicator (orange)

Photoelectric switch (main circuit)

Control output

Load

100mA max.

Connector pin arrangement Terminal 2 is not used

12 to 24V DC

0V

PNP output

E3Z-L□□8□

Operation indicator (orange)

Photoelectric switch (main circuit)

Control output

Load

100mA max.

Connector pin arrangement Terminal 2 is not used

12 to 24V DC

0V

Light source of Separate type

Connector pin arrangement

Photoelectric switch main circuit

1 Brown 12 to 24V DC

2 0V

3 Blue

Terminal 2 is not used.

Terminal 4 is not used

CONNECTOR PIN ARRANGEMENT

TYPE E3Z-L□□6/□□□8

1

2

3

4

③ Regions except the USA

When using in China, GB/T 7247.1-2024 (IEC60825-1:2014) applies to this product, it is classified as a Class 1 laser product. When using in other countries, IEC60825-1:2014/EN60825-1:2014+A11:2021 applies to this product, it is classified as a Class 1 laser product.

■DIMENSIONS

E3Z-L□□1/□□□3

Operation indicator**
Stability indicator*

灵敏度调节旋钮**
Operation mode switch**

20
17
2.1
3.1
25.4
2-M3

Vinyl insulated round cord
Standard length 2m, 4d1a

E3Z-L□□6/□□□8

Operation indicator**
Stability indicator*

灵敏度调节旋钮**
Operation mode switch**

20
17
2.1
3.1
25.4
2-M3

Vinyl insulated round cord
Standard length 2m, 4d1a

■MOUNTING

Mounting bracket (option)

Type E39-L104

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, 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.

OMRON Corporation

Industrial Automation Company

Kyoto, JAPAN

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