# OMRON

# **型E3ZM-V**

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。 ·使用本品前,请仔细阅读本说明书,
- · 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,有可能导致轻度伤害

#### ●警告表示

# **/**|\注意

请在额定电压下使用, 否则会引起故障、起火



不可将传感器连接交流电源。 有爆裂的危险。

清洗时,请勿将高压水对着一处喷射。否则会 有部品破损、保护构造劣化的危险。



# OMRON

# Model **E3ZM-V**

PHOTOELECTRIC SENSOR

# INSTRUCTION SHEET

# NOTICE:

This product meets CISPR11 class A. The intended use of this product is in an industrial environment only.

### TRACEABILITY INFORMATION: Representative in EU:

Ómron Europe B.V. Wegalaan 67-69 2132 JD Hoofddorp,

The Netherlands

Manufacturer: Omron Corporation.

Shiokoji Horikawa, Shimogyo-ku,

Kyoto 600-8530 JAPAN Shanghai Factory

No.789 Jinji Road,

Jinqiao Export Processing District

Pudong New Area, Shanghai, 201206 CHINA

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# **Precaution on Safety**

# Meanings of Signal Words



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

# Alert statements in this Manual



Do not use it exceeding the rated voltage. There is a possibility of failure and fire.



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



Do not jet the high pressure water concentrating on one place when washing the product, because it might damage of parts and deteriorate the degree of protection.



### 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) 使用环境

请不要在具有可燃性、爆炸性气体的环境下使用。

而小安在关节的成任、海州庄 (2) 插接连接头时请握住连接头外壳部。 插接连接头时请握住连接头外壳部。 使用XSP时,一定要用干作为固定工具,如果用钳子拧会破坏产品。若紧固不充 分,则保护构造就无法发挥功用,会在有振动情况下容易松动。合适的扭矩为0.3

~0.44m。 使用其它市贩连接头时,请在推荐连接头使用条件,推荐紧固扭力下使用。 一旦在连接头上卷上胶带,0形圈就就无法压入,无法确保耐水性能。所以请勿在 全接头上编绕胶带。

连接头上缠绕胶带。(3) 负载 使用时,请勿超过额定负载。(4) 低温环境 有东伤危险。低温时请勿光手碰金属表面。 (5) 油环境

请勿在油环境中使用

。 请勿擅自拆卸、修理、改造。 (7)室外使用

请勿在日光直射场所使用 ■7-4 因为有机溶剂(稀释剂、酒精等)会使产品光学特性、保护构造劣化,所以请勿

便用。
(9) 清洗
请勿使用高浓度清洗剂,否则会发生故障。另外,如用超过规定的高压水喷射,保护构造会劣化,所以请避免使用。
(10) 表面温度
有烫伤危险。根据使用条件(周围温度、电源电压、其他),传感器表面温度会要高。操作时、清洗时应注意。
(11) 导线弯曲
有破损危险。在—25℃下请勿弯曲导线。

#### 使用上的注意点

- (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 ①振动或冲击能直接传送到传感器的场所

(3) 雅动或评击能直接传送到传感临时场所 (2) 连接和安装 ①传感器最大允许电压是0630V。 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效电力栈装在同一配管中使用时,会受到干扰,有误动作甚 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0.3mm 以上、长度50m以下导线。

②建下守线必须使用数固构(U. 3mm 以上、下度 2mm以下守线。 ①导线清角用力拉拉。 ⑤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 传感器耐水保护性能。安装时请使用M 3 螺栓固定。 ⑥安装面请选择,使用安装配件(另卖)、或者平面。 ⑦连接器的插接必须在传感器电源切断情况下进行。 )由第

(3) 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。 (4) 电源重置时间 从接通电波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。 (5) 电源分别 可能企业时能从联系,所以我们建议先关闭负载或负载线的电源。

电源关闭时,可能会出现橱口脉冲,川丛及山连及人人口以外。 (6) 负载超路保护 本类传感器虽具有负载短路保护功能,但绝对不能让负载短路、切勿使输出超出额 定电流。发生负载短路时,输出会变成0FF,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借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0负载时确保通过的电流小于额定负载电流的1.8 位

#### ■规格·性能

<b>恒</b> 田 万 八		1
型号	NPN输出	型E3ZM-V61/-V66
	PNP输出	型E3ZM-V81/-V86
检出距离		12 ± 2mm
		(白、黄、黑 颜色、偏差 ±2mm)
检出范围		颜色不同各有差异
光斑		φ2mm以下
光源(发光波长)		白色LED (450~700nm)
电源电压		DC10~30 V 含波动(p-p)10%
消费电力		600mW以下(电源电压30V时 消费电流20mA以下)
控制输出		负载电源电压DC30V以下、负载电流100mA以下 (集电极开路输出)
输出残留电压		2V以下
远程控制输入		NPN輸出 ON时: 和OV短接, 1.5V以下(流出电流1mA以下)
		0FF时 : 开路或和Vcc短接 1.5V~Vcc(漏电流0.1mA以下)
		PNP输出 ON时 Vcc-1.5V~Vcc(吸入电流 1mA以下)
		0FF时 : 开路或1.5V以下(漏电流0.1mA以下)
应答时间		动作・复归: 各50us以下
周围温度		动作时: -40~+60℃、保存时: -40~+70℃(但不结冰、结露)
周围湿度		动作时: 35~85%RH、保存时35~95%RH(但不结冰、结露)
保护构造		IEC60529规格 IP67/DIN40050-9规格 IP69K

### Precautions for Safe Use

Be sure to follow the safety precautions below for added safety

(1) Use environment

sure to follow the safety precautions below for added safety. Use environment Do not use the sensor under the environment with explosive or ignition gas. Connection of connector Plug in or out the connector with the cover part of it. When using the connector XS3F, do not use pliers. Proper tightening torque is 0.3 to 0.4N·m to keep the degree of protection. When using a different connector, please use it according to recommended condition and recommended tightening torque of the connector. When the seal tape is wrapped around the connector, O-ring cannot be pushed with the connector. Do not wrap the tape around the connector to keep the water resistance. Load
Do not use the sensor over the rated values. Low-temperature environment

Low-temperature environment
Do not touch the surface of the metal with bare hands at the low
temperature because it might get the frozen burn.
Oil environment

On environment
 Do not use the sensor in the oil environment.
 (6) Alteration
 Never disassemble, repair nor tamper with the sensor.
 (7) Quidoor use

Do not use the sensor in the place exposed to the direct sunlight.

Do not use the sensor in the place exposed to the direct sunlight.

(S) Cleaning
Do not use the organic solvent such as thinner and alcohol because it might deteriorate the optical characteristic and the degree of protection.

(9) Washing
Do not use the high concentration cleaning agent because it might cause the trouble. Avoid the jet of high-pressure water over the rated values because it might deteriorate the degree of protection.

(10)Surface temperature
The surface temperature
The surface temperature of sensor rises depending on the use conditions such as ambient temperature and power supply voltage.
Be careful when you operate or clean it.Hot surface may cause heat injury.

(11)Bending of cable
It is not recommended to bend the cable at temperatures below -25°C due

# It is not recommended to bend the cable at temperatures below -25°C due

Precautions for Correct Use

(1) Do not use the product under the following conditions.
(2) In the place exposed to the direct sunlight.
(3) In the place where humidity is high and condensation may occur.
(3) In the place where thumidity is high and condensation may occur.
(3) In the place where vibration or shock is directly transmitted to the product.
(2) Connection and Mounting
(3) Be sure that before making supply the supply voltage is less than the maximum rated supply voltage. (30V DC)
(3) There are some cases where the sensor 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.
(3) For extending wires, use a cable 0.3mm² min. and 50m max. in length.
(4) Do not pull the wire strongly.
(5) Excessive force (hitting by hammer, etc.) should not be put on the sensor because it may damage its water-resistance characteristic. Use M3 screws to mount the sensor.
(6) Please use the mounting bracket (optional) or choose the flat side to be a clamp face.
(7) Plug in or out the connector after surly turning off a power supply.
(8) When using a commercially available switching regulator, be sure to ground the FG (Frame Ground) terminals.

Thug in or out the connector after surly turning off a power supply.
 Power supply
 When using a commercially available switching regulator, be sure to ground the FG (Frame Ground) terminals.
 Power supply reset time
 The sensor will begin sensing no later than 100ms after the power is turned on. If the load and the sensor is connected to different power supply, the sensor must be always turned on first.
 Turning off the power supply
 When turning off the power, output pulse may be generated. We recommend turning off the power supply of the load or load line first.
 Load short circuit protection
 This 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 control output. 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 C load is used.
 Water resistance

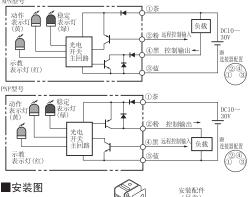
(7) Water resistance
Do not use in the water, rain or outdoors.
(8) Please process it as industrial waste.

RATING PERFORMANCE

Protection structure

KATINO I EKI OKIMANOE				
Detection system		Diffuse reflective type (Detection of mark)		
Type	NPN	E3ZM-V61/-V66		
	PNP	E3ZM-V81/-V86		
Detecting distance		(The color combination of white, yellow, and black is detected within the range of +2mm/(-2mm (typical value).)		
Detectable range		It is different because of the combination of the color.		
Spot size		2mm dia. max.		
Light source (luminescence wavelength)		White LED(450 to 700nm)		
Supply voltage		10 to 30 V DC, included ripple(p-p)10%		
Power consumption		600mW max. (supply voltage: 30V DC, current consumption: 20mA max.)		
Control output		Load supply voltage: 30V DC max. Load current: 100mA max. Open collector output		
Residual voltage		2V max.		
Remote control input		NPN ON: Short circuit to 0V or 1.5V max. (with a flow current of 1mA max.) OFF: Open or Vce-1.5V to Vcc (with a leakage current of 0.1mA max.) PNP ON: Vce-1.5V to Vcc (with an absorption current of 1mA max.) OFF: Open or 1.5V max. (with a leakage current of 0.1mA max.)		
Response time		Operate or reset: 50 us max.		
Ambient temperature		Operating: -40 to 60□, Storage: -40 to 70°C (no icing or condensation)		
Ambient humidity		Operating: 35 to 85%RH, Storage: 35 to 95%RH (no condensation)		

IEC60529: IP67/DIN40050-9: IP69K



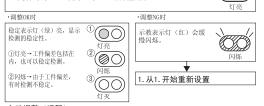
■输出回路图





2. 请按下示教按钮。(约0.5秒) 示教表示灯(红)会亮0.5秒,0N点设置结束。 3.示教表示灯(红)再次开始快速闪烁

(OFF设置是调整的步骤之一。) 在一定位置设置传感器为OFF状态。 4. 请按下示教按钮。(约0.5秒) 示教表示灯(红)亮灯0.5秒,0FF点设置结束  $\bigcirc$ 

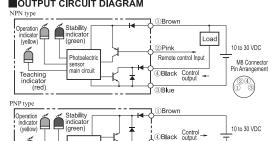


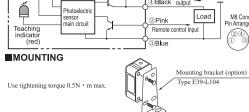
自动调整(远程) 1. 将2秒以上未到10秒的脉冲输入远程控制输入端(粉色) 2. 若移动检测时间隔度短的一侧(工件),则自动调整开始。 工件通过次以上,则调整结束。 若工件和背景的光量差没有的话,则调整级。 3. 检测时间幅度短的一侧(工件)作为输出心开始测量。

注1. 调整结束的判断以工件和背景的输出ON/OFF来判断。 远程控制输入后。在1分钟内,工件和背景间输出没有ON/OFF的话,则调整NG,请 再次进行运程控制输入。 注2. 自动调整中。应答时间为1.5ms。 注3. 自动调整归。检测时间编度矩向分量侧只能进行ON设定。为了将检测时间幅度矩 的光量一侧设定成OFF,请进行2点调整。



### **■**OUTPUT CIRCUIT DIAGRAM





# OPERATION PROCEDURE

2-points Teaching Place ON point at the specified position and press teaching button for 2 seconds or more.

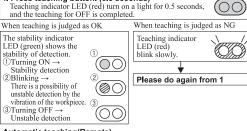
Teaching indicator LED (red) blink. (The teaching for ON is in a state of the demand.) Do the following operation within 7 seconds after pressing the button. (It returns to the origin when 7 seconds or more pass.)

2.Press teaching button. (0.5 seconds)
Teaching indicator LED (red) turn on a light for 0.5 seconds,



4. Press teaching button. (0.5 seconds)

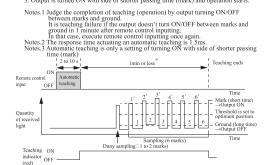
Teaching indicator LED (red) turn on a light for 0.5 seconds, and the teaching for OFF is completed.



# ·Automatic teaching(Remote)

1. Input a pulse of 2 to 10 s to the remote control input (pink).
2. By moving side of shorter passing time (mark), teaching is automatically executed (Teaching completes when the sensor detects 7 marks min.

If there is not difference of quantity of light between the mark and the ground, 



### ■外形尺寸图

E3ZM−V□1





E3ZM-V□6



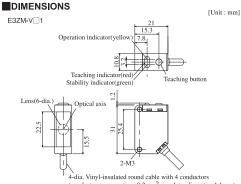


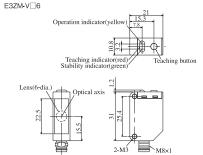
①为了确保安全,直接或间接用于人体检测时,请勿使用本产品。 需使用该用途时,请选用本公司传感器综合样本中刊登的安全传感器。 ②使用于下列用途时,与本公司营业担当者商谈之后,根据规格书等确 认的同时,对额定值性能方面请想出有余裕度的使用方法及采取即使

万一出故障也能使危险降低到最小的安全回路等的安全对策。 a)屋外的用途、潜在化学污染或者受到电气的妨害的用途或者在商品目 录、使用说明书等中没有记载的条件及环境下使用。 b)原子力控制设备、焚烧设备、铁道·航空·车辆设备、医用设备、娱乐 机械、安全装置及行政机关及根据个别业界的规定制造的设备。

。可能於及生命、财产的系统机械、装置 d) 煤气、水道、电气的供给系统记24小时连续运转系统等需要高信赖的 设备。

■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





#### SUITABILITY FOR USE THE PRODUCTS CONTAINED IN THIS SHEET ARE NOT SAFETY RATED.

THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PER-SONS AND SHOULD NOT BE RELIED UPON AS A SAFETY COMP-ONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's saftey 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 ENSU-RING 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 SYSYTEM. See also Product catalog for Warranty and limitation of Liability.



(单位: mm

使用时的承诺事项

(以耳··。)其他,以上述的 a) ~ d) 为基准,需要高度安全性的用途。 \*上述内容是适用条件的一部分。仔细阅读本公司的综合商品目录、数据 表等最新版商品目录、手册中记载的保证免责事项的内容后再使用。

■技术咨询 18/17日间 欧姆龙(中国)有限公司 地址:中国上海市浦东新区银城中路200号中银大厦2211室 电话: (86) 21-5037-2222

技术咨询热线: 800-820-4535

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(conductor cross section: 0.2mm<sup>2</sup>, insulator diameter: 1.1mm) Standard length: 2m

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