

OMRON

形 E3C-J 4P

光電スイッチ増幅器

取扱説明書

このたびは、本製品をお買い上げいただきまして、まことにありがとうございます。ご使用に際しては、次の内容を必ずお読みください。

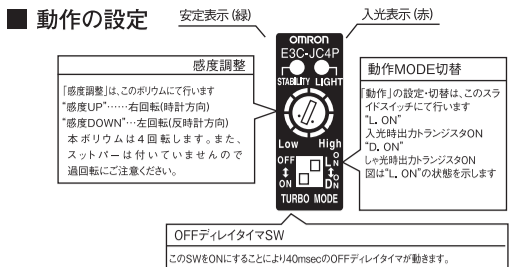
●この取扱説明書をよくお読みになり、十分にご理解のうえ、正しくご使用ください。

●この取扱説明書はいつでも参照できるように大切に保管してください。

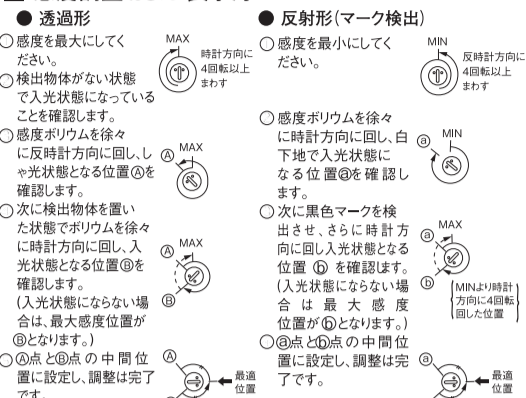


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動作の設定



感度調整および表示灯

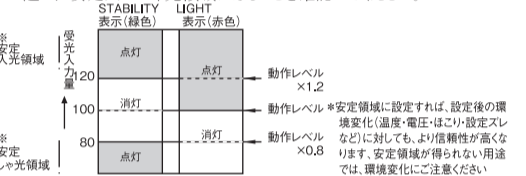


透過・反射形とも上記調整が完了後、入・しゃ光を数回くり返し入光および安定表示灯の点滅モードが次表のとおりであることをご確認ください。

入光(白地)	しゃ光(黒マーク)	安定表示(緑)が点灯しない時は周囲温度等の環境変化にご注意ください。
入光表示灯(赤) 点灯	消灯	
安定表示灯(緑) 点灯	点灯	

●感度調整完了後は付属のラベルコーションにてポリウムの穴をふさぐようにしてください。

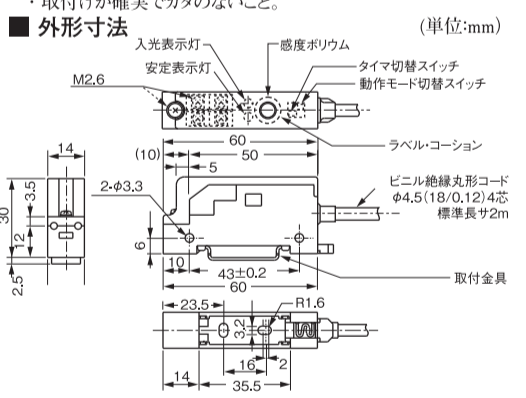
●表示灯について
●STABILITY表示(緑)、LIGHT表示(赤)は下図のレベルの状態を示しています。
●光軸調整、感度調整の後に検出物体による入・しゃ光を数回くり返し、安定入・しゃ光領域にあることを確認してください。



●自己診断出力機能について
自己診断出力は、下記の場合に出力トランジスタがONします。
①入光時:受光量が動作レベルの1.2倍以下になった場合。
②しゃ光時:信号レベルが動作レベルの0.8倍以下になった場合。(レンズの汚れや光軸ずれが生じた場合など)

保守と点検

- 動作しないときは次の点を確認してください
・配線および接続は指定どおりですか。
・端子ネジにゆるみ等ありませんか。
・光軸調整、感度調整はできていますか。
・検出物体・検出速度は定格仕様どおりですか。
・投・受光器のレンズ面にゴミ、ホコリ等の異物が付着していませんか。
・受光器に太陽光(壁などの反射)等の強い光が当たっていませんか。
・誘導電圧等が影響していませんか。
- 始業点検・定期点検は次の点を確認してください
・STABILITY表示が点灯すること。
・水・油・ホコリ等が付着していないこと。
・端子ネジにゆるみがないこと。
・取付けが確実にガタのないこと。



ご使用に際してのご承諾事項

- ①安全を確保する目的で直接的または間接的に人体を検出する用途に、本製品を使用しないください。同用途には、当社センサカタログに掲載している安全センサをご使用ください。
- ②下記用途に使用される場合、当社営業担当者までご相談のうえ仕様書などによりご確認いただくこと。定格性能に対し余裕を持った使用、万が一故障があっても危険を最小にする安全回路などの安全対策を講じてください。
a)屋外の用途。潜在的な化学的汚染あるいは電氣的妨害を被る用途またはカタログ、取扱説明書等に記載のない条件や環境での使用
b)原子力制御設備、焼却設備、鉄道・航空・車両設備、医用機械、娯楽機械、安全装置、および行政機関や個別業界の規制に従う設備
c)人命や財産に危険が及ぶシステムや24時間連続運転システムなどの高い信頼性が求められる設備
d)ガス、水道、電気の供給システムや24時間連続運転システムなどの高い信頼性が求められる設備
e)その他、上記 a)~d) に準ずる、高度な安全性が必要とされる用途
*上記は適合用途の条件の一部です。当社のベスト、総合カタログ/データシート等最新版のカタログ、マニュアルに記載の保証・免責事項の内容をよく読んでご使用ください。

オムロン株式会社 Ingsアリアルオームーションビジネスカンパニー

●お問い合わせ先
カスタマーサポートセンター
フリーコール
携帯電話:PHSなどにはご利用いただけませんので、その場合は下記電話番号へおかけください。
電話 055-982-5015 (通話料がかかります)
【技術のお問い合わせ時間】
●営業時間:8:00~21:00
●営業日:365日
●上記フリーコール以外のセンシング機器の技術窓口:
電話 055-982-5002 (通話料がかかります)
(営業のお問い合わせ時間)
●営業時間:9:00~12:00/13:00~17:30(土・日・祝祭日は休業)
●営業日:土・日・祝祭日/春期・夏期・年末年始を除く

●FAXによるお問い合わせは下記をご利用ください。
カスタマーサポートセンター お客様相談室 FAX 055-982-5051

●その他のお問い合わせ先
納期・価格・修理・サンプル・仕様書は貴社のお取引先、または貴社担当オムロン営業員にご相談ください。

A◎ 2009年10月

OMRON

TYPE E3C-J 4P

PHOTOELECTRIC SWITCH AMPLIFIER

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.

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PRECAUTION FOR SAFE USE

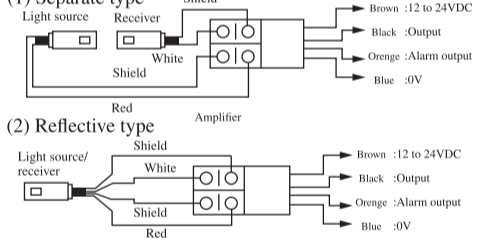
- Be sure to follow the safety precautions below for added safety.
(1) Do not use the sensor under the environment with explosive or ignition gas.
(2) Never disassemble, repair nor tamper with the product.
(3) Make sure to tighten terminal screws.
(4) Keep the supply voltage within the specified range.
(5) Do not use the sensor over the rated values.

PRECAUTIONS FOR CORRECT USE

- Do not use this product in the following places, or there is a risk of malfunction. Note) L-Light source, R-Receiver.
(1) Where it is dusty.
(2) Where any corrosive gas is present.
(3) Where it is subject to vibration or impact.
(4) Where it is possibly splashed with water, oil or chemicals.
(5) Where there is a strong-current circuit near or parallel to the switch wiring.
(6) Where there is an induction source nearby.
(7) In the place exposed to the direct sunlight.
(8) In the place where humidity is high and condensation may occur.

● Cleaning
Do not use thinner such as alcohol and benzine because it may damage a product.

Conection



● The cord should be stripped less than 20mm.

Mounting of the amplifier unit

- (1) Engage the front slot into the exclusive mounting bracket (furnished) or the DIN rail.
(2) Push the back slot into the exclusive mounting bracket or the DIN rail.
(3) Pull the back leg (yellow) with a-screwdriver, when removing a amplifier unit.

Mounting of the sensor unit

In case when sensor cord is thick, tighten the cord after taking off the rubber.

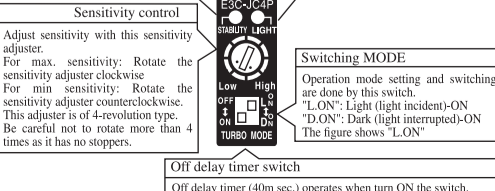
SPECIFICATION

Type	E3C-JC4P	E3C-JB4P
Control output	NPN open collector	PNP open collector
Supply voltage	12 to 24V DC ±10% ripple 10% max.	
Current consumption	50mA max.	
Response time	ON, OFF: 1ms max. (Timer SW OFF)	
Off delay time	40ms (Timer SW ON)	
Operation selector	Selectable with slide switch, L/ON or D/ON	
Output capacity	Applied voltage: 24V DC max. Output current: 100mA max. Residual voltage: 1V max. (output current 100mA)	
Alarm output capacity	Applied voltage: 24V DC max. Output current: 50mA max. Residual voltage: 1V max.	
Ambient temperature	-10 to 55°C	
Degree of protection	IEC60529 IP60	

Sensor

- The following sensors can be used.
TYPE: E3C-S10 E3C-DS5W E3C-VS3R E3C-DS1
E3C-S20W E3C-DS5W3 E3C-VS7R E3C-DS1A
E3C-S50 E3C-DS10 E3C-LS3R E3C-DS5
E3C-1 E3C-DS10T E3C-S5 E3C-DS5A
E3C-2 E3C-VS1G E3C-S5A E3C-DM2R

Adjustment for operation



SENSITIVITY ADJUSTMENT AND INDICATOR

- SEPARATE TYPE
① Set the sensitivity maximum.
② Confirm that the light beam is in receiving state when the object is out of the sensing area.
③ Turn the sensitivity adjuster counter-clockwise to find switching point-A where the light beam is not in receiving state.
④ Put the object in the light beam.
⑤ Turn the sensitivity adjuster clockwise to find Switching Point B where the light beam becomes receiving state.
⑥ Set the reading at a center of the two points of A and B.
- REFLECTIVE TYPE
(Sensing a black mark on white surface.)
① Set the sensitivity minimum.
② Place the sensing head above the white surface.
③ Turn the sensitivity adjuster clockwise to find switching point-C where the light beam is in receiving state.
④ Shift the object so that beam hits the black mark.
⑤ Continue to turn the adjuster clockwise to find Point-D where the light beam becomes receiving state.
(In case of no light coming on even if the sensitivity adjuster comes to maximum point, that point is regarded as point-D)
⑥ Set the reading at a center of the two points of C and D.

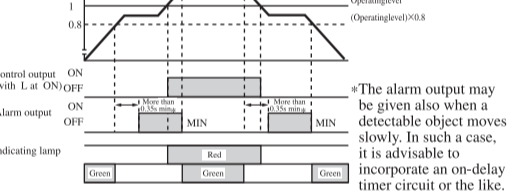
After completing the above adjustment, confirm the state of indicator as the following table by repeating incident light and interrupted light several times.

	incident(White surface)	interrupted(black mark)
LIGHT indicator (Red)	ON	OFF
STABILITY indicator (Green)	ON	ON

If STABILITY indicator doesn't light, check the external factors such as a temperature fluctuation, etc.
After sensitivity adjustment, put the caution label on the hole of cover.

INDICATOR

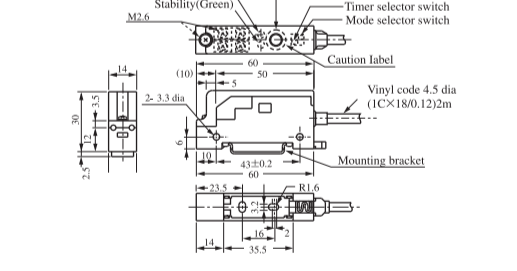
- The STABILITY indicator (green) and the LIGHT indicator (red) indicate the level condition of the chart below.
● Repeat incident light and interrupted light by the detectable object several times after the optical axis adjustment and the sensitivity adjustment, and check the switch is within the stable incident and interrupted light range.
● Stable incident condition
● Stable interrupted range
● If the switch is set within the stable range, the reliability against the change of ambient condition (temperature, voltage, dust, shift of setting, etc.) increases.
Be careful the change of ambient condition for the use that the stable range can not be obtained.
● Alarm output function
The alarm output function allows the output transistor to turn on in the following cases.
① When the light level received comes down to less than 1.2 times as great as the operating level.
② When the signal level comes up to more than 0.8 time as great as the operating level with the light being interrupted.



MAINTENANCE AND INSPECTION

- Check on the following points.
(1) Are wiring and connection made properly as instructed?
(2) Are terminal set-screws not loose?
(3) Are the optical axis and sensitivity adjusted properly?
(4) Are the object to be detected and detection speed according to the given specifications?
(5) Are not the Light source-Receiver lenses covered with dust or dirt?
(6) See if the receiver is exposed to strong light such as direct sunlight, its reflection from a wall, etc.
(7) Is there any influence by induced voltage, etc.?
● Inspect the following initially regularly.
(1) The unit is free from water, oil, dust, etc.
(2) The STABILITY indicator illuminates.
(3) The terminal set-screws of the terminal block are not loose.

OUTLINE DRAWING



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.

- 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, Bank of China Tower,
200 Yincheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Phone: +86-21-5037-2222 Fax: +86-21-5037-2200

OMRON Corporation
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