

## U-shaped Micro-photosensor PM-□25 / □45 / □65

MJECK-PM45 No.0076-50V

Thank you very much for purchasing Panasonic products. Read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

### 1 SAFETY PRECAUTIONS

Always observe

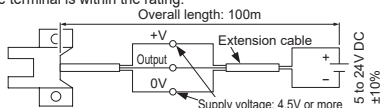
#### ⚠ WARNING

- Do not use this product for an application where it directly detects the human body. Otherwise, there is a risk of death or serious injury.
- Do not use the **PM-□65** for an application either where it directly detects the human body or where it indirectly protects the human body. Otherwise, there is a risk of death or serious injury.
- When the human body needs to be detected for safety application, use products that conform to the laws and standards related to human body detection for safety application in each country, such as OSHA, ANSI, and IEC.

- The **PM-□25** and **PM-□45** conforms to the international standard ISO 13849-1 (Category 1, PLC) and can be used as a detection device to indirectly protect the human body. (The **PM-□65** is excluded from this.)
- When using the **PM-□25** or **PM-□45** as a part of the safety system, observe the precautions summarized in the "When Using for Safety Applications". The "When Using for Safety Applications" explains important rules that must be observed to prevent personal injury and property damage when using the product as a part of the safety system. The "When Using for Safety Applications" can be downloaded from the following website.  
[https://www3.panasonic.biz/ac/e/dl\\_center/index.jsp](https://www3.panasonic.biz/ac/e/dl_center/index.jsp)

### 2 CAUTIONS

- This product has been developed / produced for industrial use only.
- Since the sensor is intended for use inside machines, no special countermeasures have been taken against extraneous light. Please take care that extraneous light is not directly incident on the beam receiving section.
- If the sensor is used in a place having excessive dust, periodically clean the emitting and receiving sections with a dry, soft cloth.
- Cable extension is possible up to an overall length of 100m with a 0.3mm<sup>2</sup> or more, cable. When using for safety applications, use a cable that is 30m or less in length.
- Since voltage will drop as the cable gets longer, ensure that the power supply voltage at the end of the sensor's included cable and at the terminal is within the rating.



But, when the overall cable length, including the cable attached to the sensor, is as given below, there is no need to confirm the voltage.

| Wire conductor cross-section area | Overall cable length |
|-----------------------------------|----------------------|
| 0.08 to 0.1mm <sup>2</sup>        | Up to 5m             |
| 0.2mm <sup>2</sup>                | Up to 10m            |
| 0.3mm <sup>2</sup>                | Up to 20m            |

- The extension of a power supply line and the output line of less than 10m is acceptable in case using this product as conforming to S-mark.
- If there is a large surge generating equipment, such as, motor, solenoid, electromagnetic valve, etc., in the vicinity of the micro-photosensor, use a surge absorber on that equipment. Further, do not run the sensor cables along power lines and use a capacitor between +V and 0V, if required. Use the sensor after confirming that the surge has been eliminated.
- Observe the conditions shown in the table below when installing the product.

|                   | PM-□45 / PM-□65               | PM-□25                          |                               |
|-------------------|-------------------------------|---------------------------------|-------------------------------|
| Screw             | M3                            | M2                              | M3                            |
| Tightening torque | 0.5N·m                        | 0.15N·m                         | 0.5N·m                        |
| Spring washer     | 1pc                           | 1pc                             | 1pc                           |
| Plain washer      | ø6mm<br>(small diameter type) | ø4.3mm<br>(small diameter type) | ø6mm<br>(small diameter type) |

- Do not use during the initial transient time (50ms) after the power supply is switched on.
- In case the **PM-25** series is used at an ambient temperature of +50°C, or more, make sure to mount it on a metal body.
- The cable of **PM-□25-R** is a flexible cable usable on a moving base. When the sensor is mounted on a moving base, fix the sensor cable joint so that stress is not applied to it.
- Take care that the flexibility of the **PM-□25-R** cable is lost if the ambient temperature is near -10°C.
- When storing **PM-□25-R**, make sure that the cable does not come into contact with the sensing section or operation indicator section.

### 3 STANDARDS AND REGULATORY COMPLIANCE

- This product complies with the following standards and regulations.

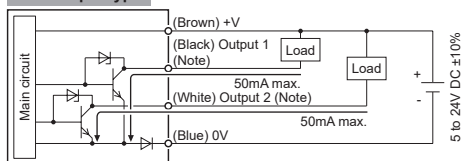
• **EU Directives**  
EMC Directive 2014/30/EU  
• **European Standards**  
EN 60947-5-2



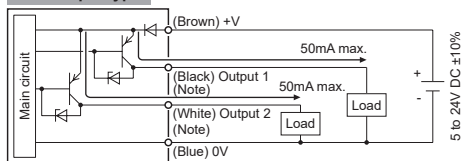
- The **PM-□25** and **PM-□45** conform to the following standards and regulations.  
• **International Standards**  
ISO 13849-1: 2015 (Category 1, PLC)

### 4 I/O CIRCUIT DIAGRAM

#### NPN output type



#### PNP output type



Note: Ensure to insulate the unused output wire.

#### <Output operation>

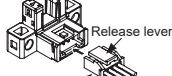
|          | Color code | Output operation |
|----------|------------|------------------|
| Output 1 | Black      | Light-ON         |
| Output 2 | White      | Dark-ON          |

### 5 WIRING (PM-□65)

#### Connection method

- Insert the cable with connector **CN-14A-C□** / **CN-14A-R-C□** in the connector part of this product as shown in the figure below.

#### <Connector pin position>



| Terminal designation | Terminal No. |
|----------------------|--------------|
| 1                    | +V           |
| 2                    | Output 1     |
| 3                    | Output 2     |
| 4                    | 0V           |

**CN-14A-C□** / **CN-14A-R-C□**

<Mating connector>

Housing: PAP-04V-S (Manufactured by J.S.T. MFG CO., LTD.)

#### Disconnection method

- Pressing the release lever attached to the cable with connector, pull out the connector.

Note: Do not pull by holding the cable without pressing the release lever, as this can cause cable break or connector break.

## Panasonic Corporation

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<https://panasonic.net/id/pidx/global>

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