



## INSTRUCTION MANUAL

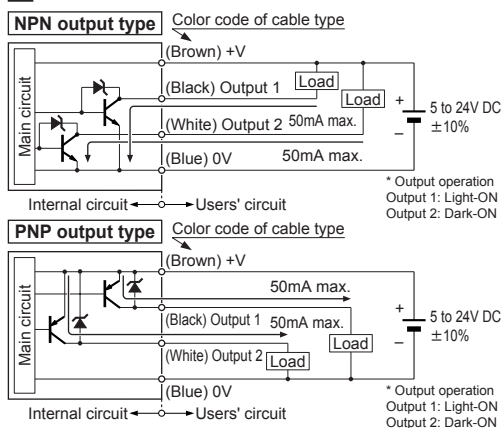
Photoelectric Sensor Built-in U-shaped Micro-photosensor  
**PM-□24(P), PM-□24-R, PM-□44(P), PM-□54(P)**

Thank you very much for using SUNX products. Please 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.

### WARNING

- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- Take care not to apply any force to the terminal of the connector type **PM-□54(P)** and the connector **CN-14**. Furthermore do not plug in / pull out the connector more than 10 times, since it can cause contact-failure.
- Since protection circuit against output short-circuit or reverse polarity connection is not incorporated, make sure to wire correctly. Also, ensure to insulate the unused output wire.  
Take care that wrong wiring will damage the sensor.

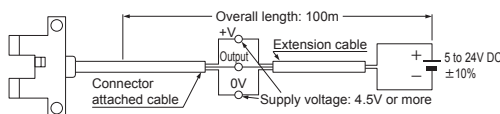
## 1 I/O CIRCUIT DIAGRAM



## 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.
- When the connector **CN-14** is inserted into the connector type **PM-□54(P)**, insert it straight till the hook of the connector is fitted to the hook of the sensor. In order to pull the connector out, hold the connector body and then apply a force to the extent that the hook of the connector comes off from the hook of the sensor.

- If soldering is done directly on the terminals of the connector type **PM-□54(P)** and the connector **CN-14**, solder them under the following conditions: temperature 260°C or less, time 3 sec. or less, soldering position 1.5mm or more away from terminal base.
- 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. However, since a voltage drop shall occur due to the cable extension, ensure that the power supply voltage at the end of the cable attached to the sensor or at the sensor terminals 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            |

- 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.
- In case the sensor is fixed with screws, strictly observe the following conditions.

|                   | PM-□24(P), PM-□24-R           | PM-□44(P), PM-□54(P)        |
|-------------------|-------------------------------|-----------------------------|
| Screw             | M2                            | M3                          |
| Tightening torque | 0.15N·m or less               | 0.5N·m or less              |
| Washer            | φ 4.3mm (small diameter type) | φ 6mm (small diameter type) |

Note: If the ultra-small type **PM-□24(P)**, **PM-□24-R** is used at an ambient temperature of 50°C or more, make sure to mount it on a metallic body.

- Do not use during the initial transient time (50ms) after the power supply is switched on.
- The cable of **PM-□24-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-□24-R** cable is lost if the ambient temperature is near -10°C.

## 3 INTENDED PRODUCTS FOR CE MARKING

- The models listed under 'Catalogue' come with CE Marking. As for all other models, please contact our office.



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