B-986(3)

INSTRUCTION SHEET

Photoelectric Sensor
SA1E Series
(Background suppression)

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

SAFETY PRECAUTIONS

⚠ CAUTION

Caution notices are used where inattention might cause personal injury or damage to equipment.

1 Type

SA1E-B□□□

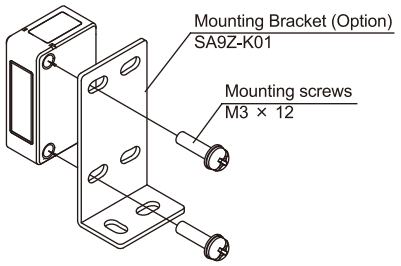
- blank : Cable (1m)
- -2M : Cable (2m)
- -5M : Cable (5m)
- C : Connector (M8)
- 1 : Light ON / 2 : Dark ON
- N : NPN Output / P : PNP Output
- Background suppression

2 Specifications

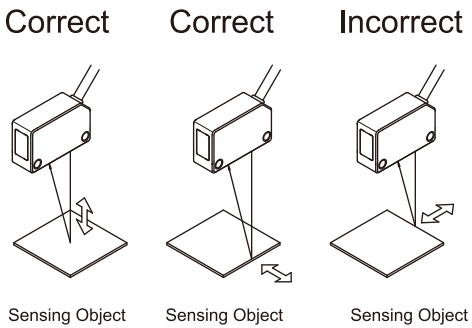
Detection System	Background suppression
Power Voltage	12 to 24V DC (ripple p-p 10% maximum (Operating range 10 to 30V DC)
Current Consumption	30 mA maximum
Detection Range	20 to 200 mm
Setting Range	40 to 200 mm
Control Output	Open collector output (NPN / PNP output selectable) Load voltage : 30V DC maximum Load current : 100mA maximum Voltage drop : 2V maximum
Protection Circuit	Reverse polarity protection Load short circuit protection Reverse output polarity curcuit
Interference prevention	2 units can be installed in close proximity
Response Time	1 ms maximum
Ambient Temperature	Operating : -25 to 55 ℃ Storage : -40 to 70 ℃ (no freezing and condensation)
Ambient Humidity	Operating : 35 to 85% RH Storage : 35 to 85% RH (no freezing or condensation)
Degree of protection	IP67 (IEC60529)
Material	Housing : PBT Lens cover:PMMA Knob : POM
Cable	ϕ3.5mm, 3-core, 0.2mm², 1m / 2m / 5m cabtyre cable

3 Installation

- Do not apply excessive impact on the sensor during the installation process, so as to prevent damage or deterioration in the degree of protection.
- To install the sensor, tighten the mounting screws to a torque of 0.4 to 0.5 N·m.



- Install the sensor head perpendicular to the object transfer as shown below to minimize sensing errors.



4 Notes for Operation

- Do not use the sensor during the transient time of 200 ms after turning on the power supply.
- If the sensor and the load are connected to different power supplies, the sensor must always be turned on first.
- Do not install the sensor outdoors, nearby induction device, or heat source. Choose locations free from frequent vibrations, shocks, dust, toxic gases, water, oil, and chemicals, so as to prevent malfunctions and damage.
- Do not expose the sensor to sunlight or other direct light projections.
- Do not use the sensor with drops of water remaining on the lens or aperture of slits.To remove dust and moisture build-up, use soft dry cloth. PMMA is used for optical elements. Do not use ammonia or caustic soda, alcohol, thinner for cleaning.

⚠ CAUTION

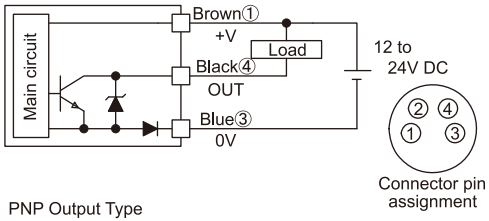
- Do not apply the voltage over the rated range or AC voltage, otherwise the switch may blow out or burn.

5 Wiring

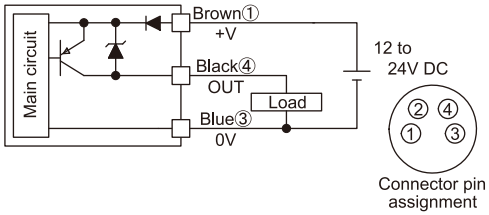
- Turn off the power supply before wiring.
- Connect correctly to prevent damage.
- The power voltage must not exceed the rated range.
- When using a switching power supply, be sure to ground the FG (frame ground) terminal.
- Do not install the sensor wiring in the same conduit with high-voltage lines and power lines.
- Cable extension is allowed up to 100m using a cabtyre cable with core wires of 0.3 mm² or more.
- To connect the sensor with connector cable, tighten connector to a torque of 0.2 to 0.4 N·m.

□WIRING DIAGRAM

NPN Output Type

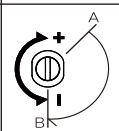
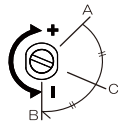


PNP Output Type



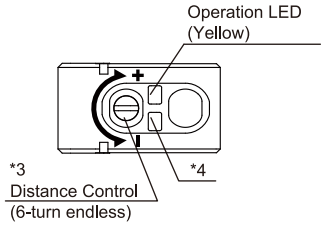
6 Adjustment

- Referring to the table below, adjust the distance of the SA1E photoelectric sensor when necessary. The table explains the status of operation LED when the operation mode is set to light ON.

Step	Distance Control	Adjusting Procedure
1		Install a photoelectric sensor and the sensing object. Turn the control counter-clockwise until the operation LED turns OFF. Then turn clockwise until the operation LED turns ON (point A). (*1)
2		Remove the sensing object, then the operation LED turns OFF. Turn clockwise until the operation LED turns ON (The background is detected) (point B). (*2)
3		Set the middle point between point A and B as point C.

*1: Make one turn or more clockwise from point A and set the position as point C when the background is too far and the operation LED dose turn ON.

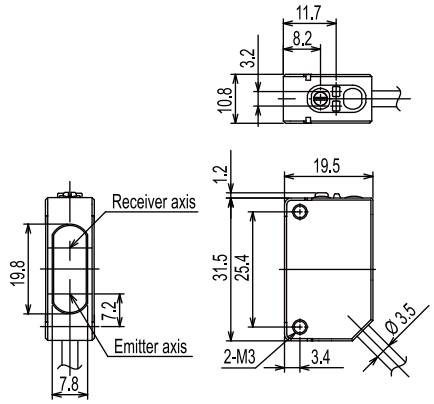
*2: There may be more than 1 turn between points A and B, since this photoelectric sensor incorporates a 6-turn adjuster.



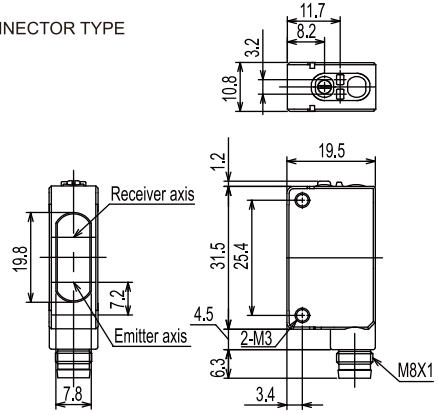
*3: Sensing range becomes longer when turned clockwise.
*4: Stable LED is not incorporated in this product.

7 Dimensions (All dimensions in mm)

CABLE TYPE



CONNECTOR TYPE



*: The connector length is 18 mm when a connector cable of right angle type (SA9Z-CM8K-4L□) is attached.

IDEC CORPORATION
http://www.idec.com

2013.5