

Specification

Model	NPN: ZX-PE0040N	PNP: ZX-PE0040P
Working Principle	Photoelectric Sensor	
Optical Working Principle	Background suppression diffuse reflection	
Detection Range	20 – 400mm	
Light Source	Red laser, 650nm (modulated), Class 2	
Spot Size	about Ø1.5mm/400mm	
Optical Object Detection	Ø0.5mm	
Indicator Light	Operating: green, Output: red	
Sensitivity Adjustment	6-turn potentiometer	
Switching Mode	L.on (light-on)/D.on (dark-on) switchable	
Output Mode	NPN or PNP collector open	
Response Time	≤1.2ms	
Hysteresis	≤5%	
Operating Voltage	10 – 30V DC / ±10%	
Current Consumption	≤20mA	
Residual Voltage	≤1.5V	
Load Current	≤100mA (30V DC)	
Insulation Resistance	≥20MΩ (250V DC)	
Withstand Voltage	1000VAC (50/60Hz)	
Protection Circuit	Reverse polarity protection / short-circuit	
Operating Temperature	-10 – 55°C (no freezing)	
Storage Temperature	-30 – 70°C (no freezing)	
Operating Humidity	35 – 85%RH (no condensation)	
Storage Humidity	35 – 95%RH (no condensation)	
Ambient Light	Incandescent ≤1000 Lux, LED ≤6000 Lux, Sunlight ≤20000 Lux	
Vibration Resistance	10 – 55Hz, amplitude 1.5mm, 2 hours each	
Protection Rating	IP65	
Max. Tightening Torque	≤0.5Nm	
Connection Method	2m/4-core cable	
Material	PBT+glass fiber (housing); PMMA (lens)	
Dimensions	11.1x31.7x20.8mm	
Weight	about 68g	

**Note:** Specifications and design are subject to change without notice.

Safety Precautions

Please read and follow the safety instructions below to avoid injury, equipment damage, or hazardous situations. Retain this manual for future reference.

Laser Safety

- This product uses a visible semiconductor laser as its light source. Do not look directly into the laser beam or into its reflection from mirrors or reflective surfaces. Direct eye exposure may cause serious injury or permanent blindness.
- This product does not have an automatic laser shutdown function after disassembly. Do not disassemble or modify the unit under any circumstances.

Usage Restrictions

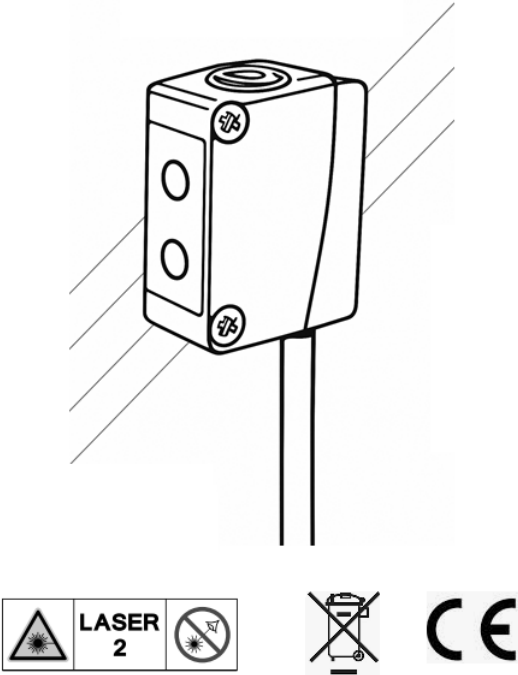
- This product is not explosion-proof. Do not use in environments containing flammable gases, vapors, or liquids.
- Do not use this product as a safety or protective device for human body protection.
- Do not use in or near water. The product is not waterproof.
- Do not use outdoors or in locations exposed to the elements.

Electrical Safety

- Always turn off power before connecting or disconnecting cables. Connecting under live power may cause electric shock or device failure.
- Do not exceed the rated voltage. Doing so may result in fire, electric shock, or malfunction.
- Do not use AC power if the device is designed for DC only. Risk of rupture or damage.
- Avoid transition state usage (within ~1.5s of powering on). Unstable operation may occur.
- Separate high-voltage and power wiring from signal wiring to prevent false operation due to electrical interference.

Quick Guide

Photoelectric Laser Sensor



593-NPE004-001 Ver.B

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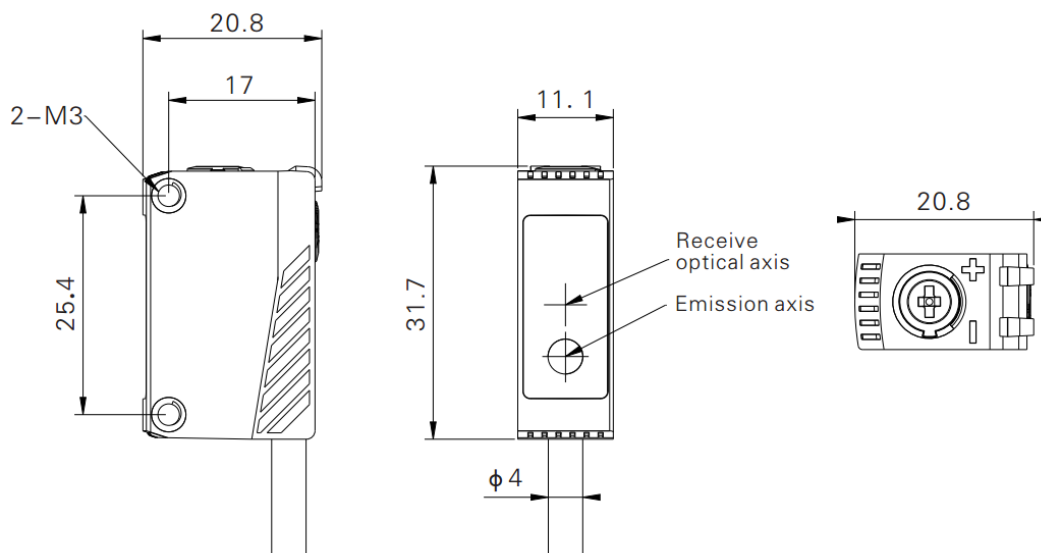
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Package Contents

- Sensor × 1
- Quick Guide × 1
- Accessories Kit × 1

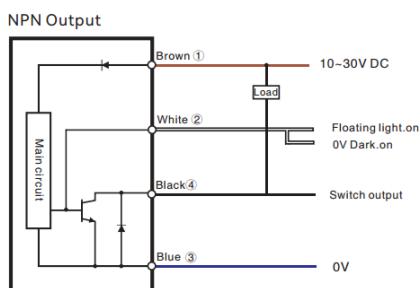
\*Note: Content in this section is for reference only. Please consult the actual packaging for contents.

## Dimensions

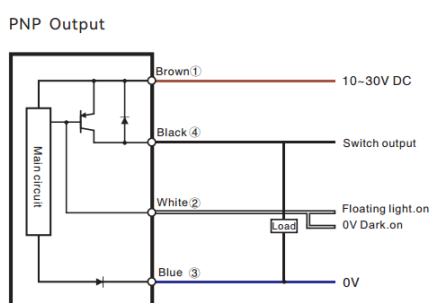


## Circuit Diagram

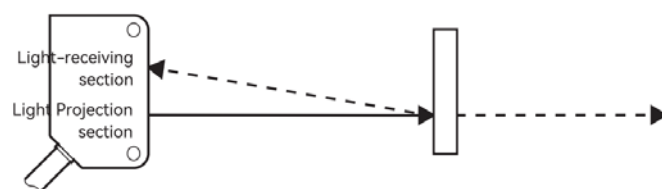
### ZX-PE0040N



### ZX-PE0040P



## Installation



- 1. Position the Sensor Unit:**  
Mount the sensor so that both the light-projection and light-receiving sections are securely fixed on one side of the detection area. Ensure it's stable and properly aligned for accurate operation.
- 2. Test the Setup:**  
Power on the sensor and check the indicator light or signal output to confirm the beam is properly aligned and unobstructed. Adjust the sensor if needed until the indicator shows a clear beam path.
- 3. Detect Objects:**  
The sensor will activate when an object enters the detection area and blocks the light beam. This interruption prevents the light from reaching the receiving section, triggering the sensor's output.

## Voltage and Wiring Precautions

- Do not exceed the specified voltage range.  
Applying voltage beyond the rated range, or using AC power instead of DC, may result in damage, malfunction, or burning of the sensor.
- Do not short-circuit the load.  
A load short circuit can cause permanent damage or burning of internal components.
- Observe correct polarity.  
Always ensure proper connection of the power supply terminals. Incorrect wiring or reversed polarity may cause cracking, overheating, or failure of the sensor.
- Do not connect power without a load.  
Supplying power directly to the sensor without connecting a load may cause internal damage. Always connect the load before applying power.
- Note on Short-Circuit Protection:**  
The load short-circuit hold function is effective only under rated voltage and correct polarity. Misuse may disable this protection.

## Maintenance

Regular inspection ensures reliable sensor performance. Periodically check the following:

- Sensor is securely mounted, properly aligned, and within sensing range. Ensure the target object hasn't changed.
- Wiring connections are intact and secure.
- Sensor head is free of dust or debris.
- Operating environment meets specified temperature and condition requirements.
- No abnormal conditions such as vibration, leakage, or interference are present.

### Additional Precautions:

- Wait at least 1 minute after power-on before use.
- Avoid contact with organic solvents.
- Protect sensing surface from impact.
- Do not pull or move the power cable during operation.