

Autonics

PICKING SENSOR BWPK SERIES

INSTRUCTION MANUAL



Thank you for choosing Autonics product.
Please read the following safety considerations before use.

■ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.
※⚠ symbol represents caution due to special circumstances in which hazards may occur.

- Warning** Failure to follow these instructions may result in serious injury or death.
- Caution** Failure to follow these instructions may result in personal injury or product damage.

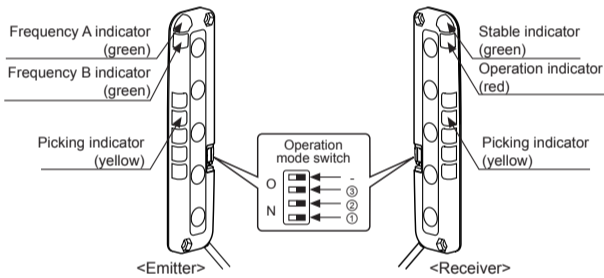
⚠ Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
Failure to follow this instruction may result in fire, personal injury, or economic loss.
- Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire.
- Check 'Connections' before wiring.**
Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire.
- This product is not safety sensor and does not observe any domestic nor international safety standard.**
Do not use this product with the purpose of injury prevention or life protection, as well as in the place where economic loss may be present.

⚠ Caution

- Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
- Use dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in fire.
- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
Failure to follow this instruction may result in fire or explosion.
- Do not use a load over the range of rated relay specification.**
Failure to follow this instruction may result in insulation failure, contact melt, contact failure, relay broken, or fire.

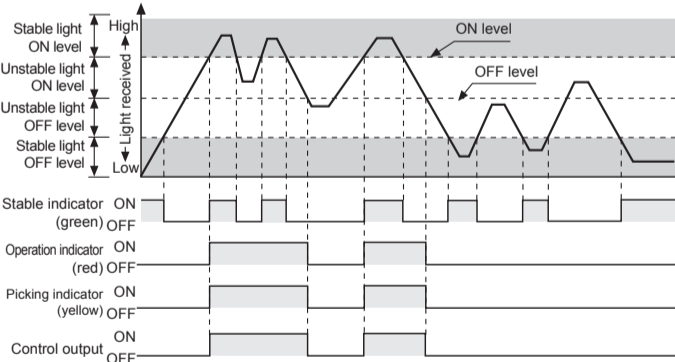
■ Structure



○ Operation mode switch

No	Function	Switch OFF	Switch ON
①	Selection of transmission frequency	Frequency A	Frequency B
②	Selection of operation indicator	Lighting indicator	Flashing indicator
③	Emitter	Selection of sensing distance mode	Long mode
③	Receiver	Selection of operation mode	Light ON

■ Timing Diagram Operation



※The above diagram is the state of operation for Light ON, but in case of Dark ON, it is opposite operation against Light ON.
※Picking indicator is operated by connecting picking input line and output line. (If not connecting these, picking indicator is OFF regardless of operation mode.)

■ Operation Indicator

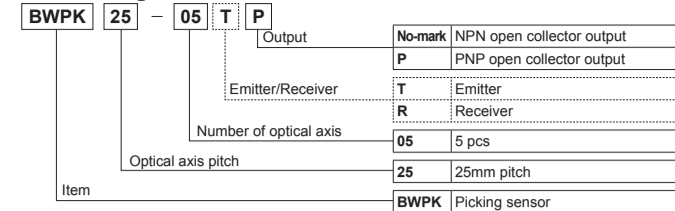
Item	Emitter Indicator			Receiver Indicator			Control output
	Green	Green	Picking Indicator	Green	Red	Picking Indicator	
Power supply	☼	●	-	-	-	-	-
FREQ. A operation	☼	●	-	-	-	-	-
FREQ. B operation	☼	●	-	-	-	-	-
Stable light ON	-	-	☼	☼	☼	☼	ON
Flashing function ON	-	-	☼	☼	☼	☼	ON
Unstable light ON	-	-	☼	☼	☼	☼	ON
Unstable light OFF	-	-	●	●	●	●	OFF
Stable light OFF	-	-	●	●	●	●	OFF
Over current	-	-	●	●	●	●	OFF

Display classification list	
☼	Lighting
●	Light out
☼	Flashing by 0.3sec.
☼	Flashing simultaneously by 0.3 sec.

※The operations of 'Operation indicator' and 'Picking indicator(Red)' for stable light ON level, unstable light ON level, unstable light OFF level, and stable light OFF level are for Light ON. (In case of overcurrent, control output is OFF regardless of operation mode.)

※The above specifications are subject to change and some models may be discontinued without notice.
※Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

■ Ordering Information



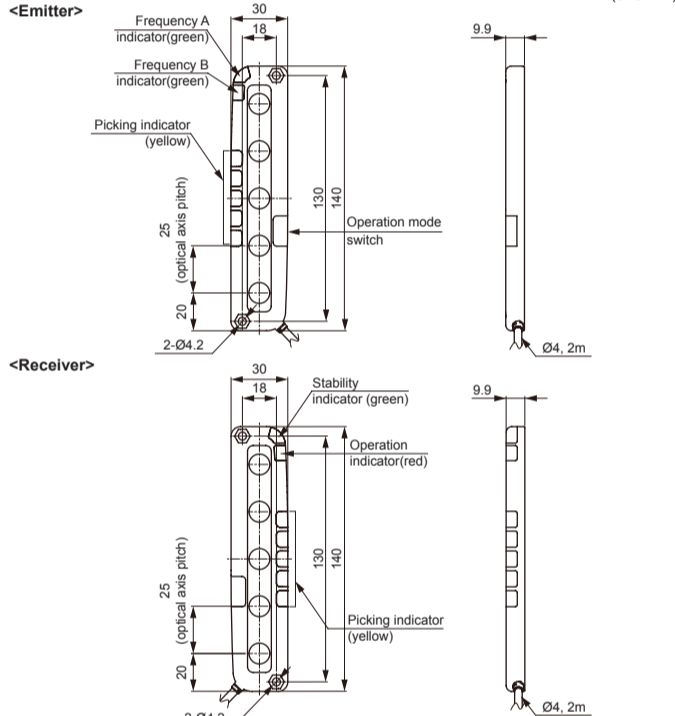
※ This information is intended for product management. (no need to refer when selecting a model)

■ Specification

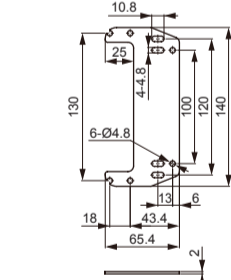
Model	BWPK25-05
NPN open collector output	BWPK25-05P
PNP open collector output	
Sensing type	Transmitted beam type
Sensing distance	0.1 to 3m
Short mode	0.05 to 1m
Sensing target	Opaque materials of min. Ø35mm
Optical axis pitch	25mm
Number of optical axis	5pcs
Sensing width	100mm
Power supply	12-24VDC= ±10% (ripple P-P: max. 10%)
Protection circuit	Built-in
Current consumption	Emitter: Max. 60mA, receiver: Max. 60mA
Control output	NPN or PNP open collector output • Load voltage: max. 30VDC=, • Load current: max. 150mA • Residual voltage - NPN: max. 1VDC=, PNP: max. 2.5VDC
Operation mode	Switching of Light ON/Dark ON by switch
Short-circuit protection	Built-in
Response time	Max. 30ms
Light source	Infrared LED (850nm modulated)
Interference protection	Interference protection by transmission frequency selection
External picking input	Non-contact or contact input NPN open collector output: lighting(0-2V), light out (5-30V or open) PNP open collector output: lighting(4-30V), light out (0-3V or open)
Environment	Ambient illumination: Sunlight: max. 10,000lx, incandescent lamp: max. 3,000lx Ambient temperature: -10 to 55°C, storage: -20 to 60°C Ambient humidity: 35 to 85%RH, storage: 35 to 85%RH
Noise immunity	±240V the square wave noise (pulse width 1µs) by the noise simulator
Dielectric strength	1,000VAC 50/60Hz for 1minute
Insulation resistance	Over 20MΩ (at 500VDC megger)
Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours
Shock	500m/s ² (approx. 50G) in each X, Y, Z direction for 3 times
Protection	IP40 (IEC standard)
Material	Case: polycarbonate/Acrylonitrile-Butadiene-Styrene Sensing part: polymethyl methacrylate
Cable	Ø4.0mm, 4-wire, length: 2m (emitter: Ø4.0mm, 3-wire, length: 2m) (AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm)
Approval	CE
Weight	Approx. 220g (approx. 180g)

※1: The weight is with packaging and the weight in parenthesis is only unit weight.
※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

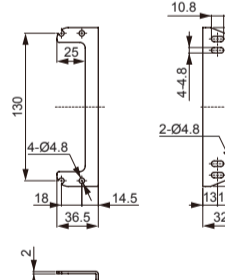
■ Dimensions



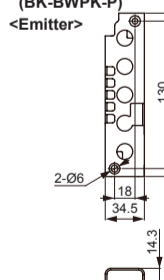
• Bracket: sold separately
• Flat bracket (BK-BWPK-ST)



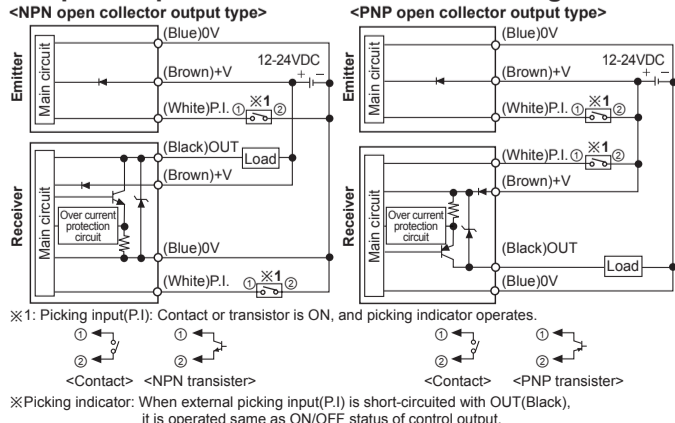
• L-shaped bracket (BK-BWPK-L)



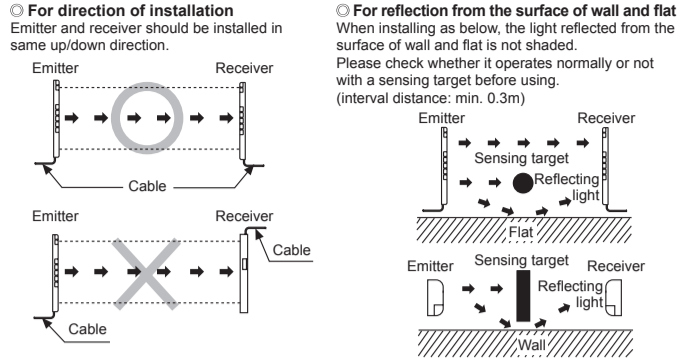
• Protection bracket (BK-BWPK-P)



■ Input/Output Circuit and Connection Diagram



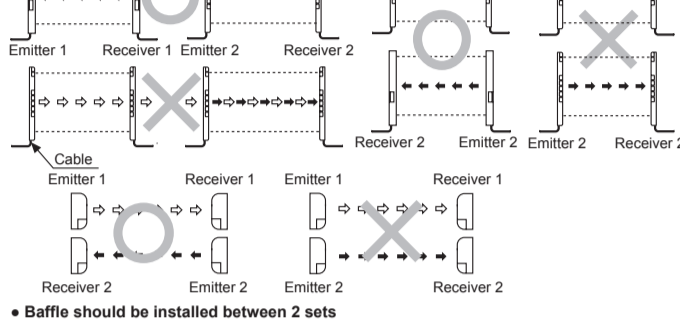
■ Installations



○ For direction of installation
Emitter and receiver should be installed in same up/down direction.

○ For reflection from the surface of wall and flat
When installing as below, the light reflected from the surface of wall and flat is not shaded. Please check whether it operates normally or not with a sensing target before using. (interval distance: min. 0.3m)

○ For prevention of interference
It may cause interference when installing more than 2 sets of the sensor. In order to avoid the interference of the sensor, please install as following figures and use the interference prevention function not to let light of the other emitter in a receiver.



• Transmission direction should be opposite between 2 sets

• Baffle should be installed between 2 sets

• It should be installed out of the interference distance

Sensing distance(L)	Allowable installation of distance(D)
0.1 to 1m	Min. 0.1m
Min. 1m	Min. 0.2m

※It may be a little different based on installation environment.

※Avoid using the unit in the place where the sensor is exposed directly to the fluorescent light with high speed start or high frequency.

■ Function

Operation mode switch(Emitter)	Rated sensing distance
Long mode	3m
Short mode	1m

Operation mode switch (Emitter+Receiver)	Frequency A, B indicator(Emitter)
Sensor ① (Transmission frequency A)	FREQ.A Frequency A(green) Frequency B(green)
Sensor ② (Transmission frequency B)	FREQ.B Frequency A(green) Frequency B(green)

Operation mode switch (Receiver)	Control output operation
Light ON	It is ON when it is light ON.
Dark ON	It is ON when it is light OFF.

Operation mode switch (Emitter+Receiver)	Picking indicator operation
Lighting	Lighting indicator
Flashing	Flashing indicator

■ Troubleshooting

Malfunction	Cause	Troubleshooting
Non-operation	Power Cable incorrect connection or disconnection Rated connection failure	Supply rated power. Check the wiring. Use it within rated sensing distance.
Non-operation in sometimes	Pollution by dirt of sensor cover Cable connection failure	Remove dirt by soft brush or cloth. Check the assembled part of the cable.
Control output is OFF even though there is not a target object.	Out of rated sensing distance There is an obstacle to cut off the light emitted between emitter and receiver There is a strong electric wave or noise generator such as motor, electric generator, high voltage line etc.	Use it within rated sensing distance. Remove the obstacle. Put away the strong electric wave or noise generator.
LED displays for over current	Control output line is shorten Over load	Check the wiring. Check the rated load capacity.

■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Use the product, 1 sec after supplying power.
When using separate power supply for the sensor and load, supply power to sensor first.
- When using switching mode power supply to supply the power, ground F.G. terminal and connect a condenser between 0V and F.G. terminal to remove noise.
- When connecting a DC relay or other inductive load, remove surge by using diodes or varistors.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
- This unit may be used in the following environments.
①Indoors (in the environment condition rated in 'Specifications')
②Altitude max. 2,000m
③Pollution degree 2
④Installation category II

■ Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connector/Sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, Co., Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSR/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

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