

Autonics

**PICKING SENSOR
BWPK SERIES**

M A N U A L



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

- *Please keep these instructions and review them before using this unit.
- *Please observe the cautions that follow:
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- *The following is an explanation of the symbols used in the operation manual.
- Caution:** Injury or damage may occur under special conditions.

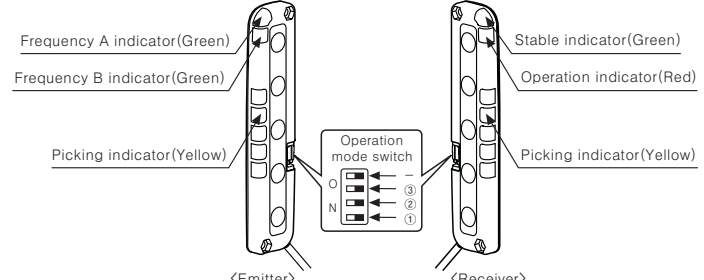
Warning

- This unit is not safety sensor protecting from damages of property or injury from dangerous parts of mechanical equipment, but it is the sensor detecting a normal object or irruption into the working area regardless of safety.
- Please don't use it as safety equipment for the cutter or press.
- This unit doesn't follow any international safety standard. Please check the safety standard of the country the product will be used.
- Please note that we don't take any responsibilities for the problem related to overseas' laws or <Product liability(PL)> is happened by using as follows:
 - ① Safety equipment for protecting a hand or other parts of worker at dangerous area.
 - ② Interlock on mechanical equipment.
 - ③ Safety sensor on mechanical equipment for stopping it when detecting a hand or other parts of worker.
 - ④ Using for detecting a hand or other parts of worker at dangerous area and controlling door or window.

Caution

- Please don't do wiring in power ON status. It may cause an electric shock.
- Please use in the rated specifications. It may cause malfunction or the life cycle.
- Please ground F.G.(Frame Ground) terminal when supplying power by switching power.
- Please, avoid fluorescent light with high frequency, high speed start or signal light affecting to sensing ability.
- It may unavailable to shade the light by reflecting from surface of a wall when installing it in 0.3m from wall or flat parts. Please keep < Installation >.
- It may cause malfunction from interference when using them closely in parallel. Please keep < Installation >.
- Please install emitter and receiver in same direction. The emitting light will not be transferred to receiver if installed in opposite direction.
- Please avoid a frequent vibrating area. It may cause a fire and malfunction.
- In cleaning the unit, do not use water or an oil-based detergent. It may cause an electric shock or fire.
- Please make power and output line shorten as possible, or it may cause malfunction by surge etc.

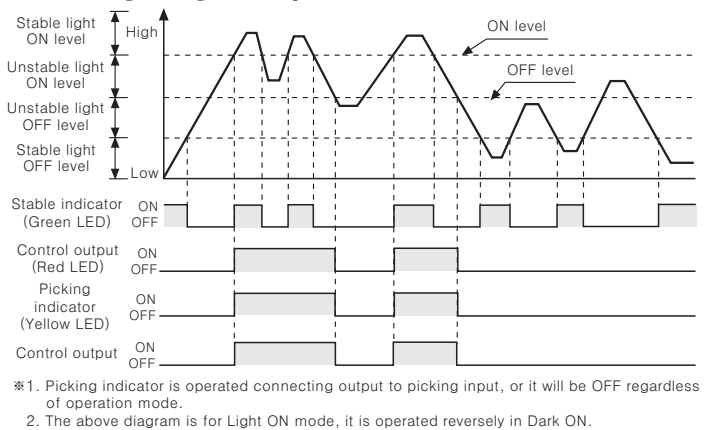
Structure



① Operation mode switch

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

Timing diagram operation



Indicator display

Item	Emitter		Receiver		Control output
	Green	Red	Green	Red	
Power supply	●	●	●	●	—
FREQ. A operation	●	●	—	—	—
FREQ. B operation	●	●	—	—	—
Stable light ON level	—	●	●	●	ON
Flickering function ON	—	●	●	●	ON
Unstable light ON level	—	●	●	●	ON
Unstable light OFF level	—	●	●	●	OFF
Stable light OFF level	—	●	●	●	OFF
Over current	—	●	●	●	OFF

Display classification list

●	Lighting
●	Light out
●	Flickering by 0.3sec.
●●	Flickering simultaneously by 0.3 sec.

*Red operation/picking indicator, control output are for Light ON mode, it is operated reversely in Dark ON mode in stable Light ON/OFF, unstable Light ON/OFF. (In case of overcurrent, control output is OFF regardless of operation mode.)

*The above specification are changeable without notice anytime.

Ordering information

BWPK 25 - 05 P

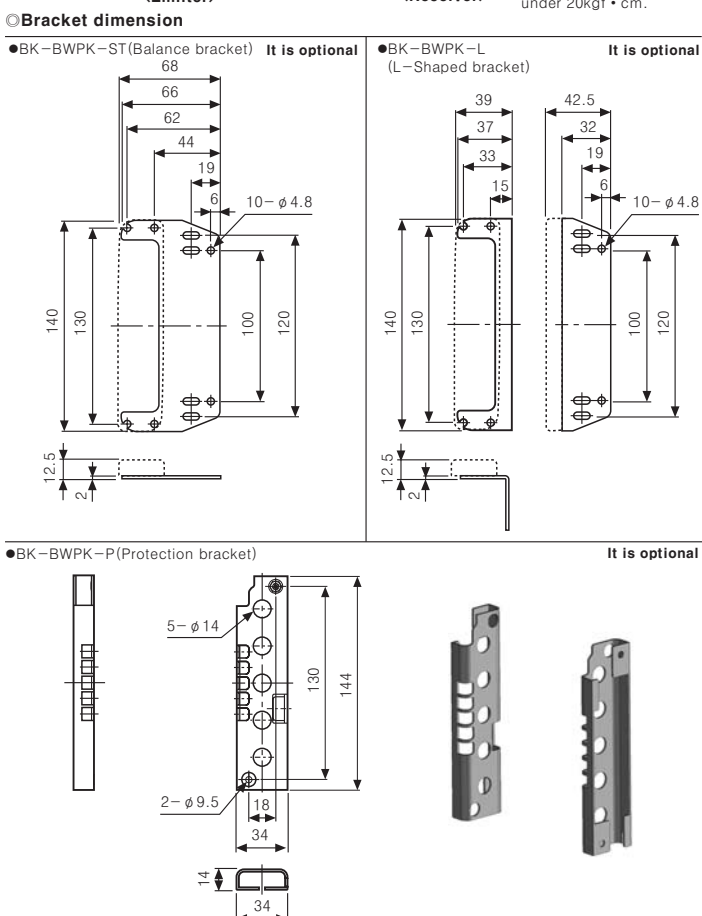
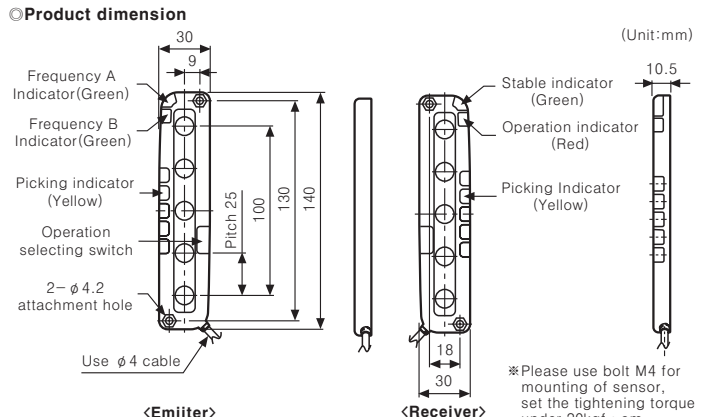
Output	NPN open collector output
	P PNP open collector output
Number of optical axis	05 5 piece
Optical axis pitch	25 25mm
Type	Picking sensor

Specification

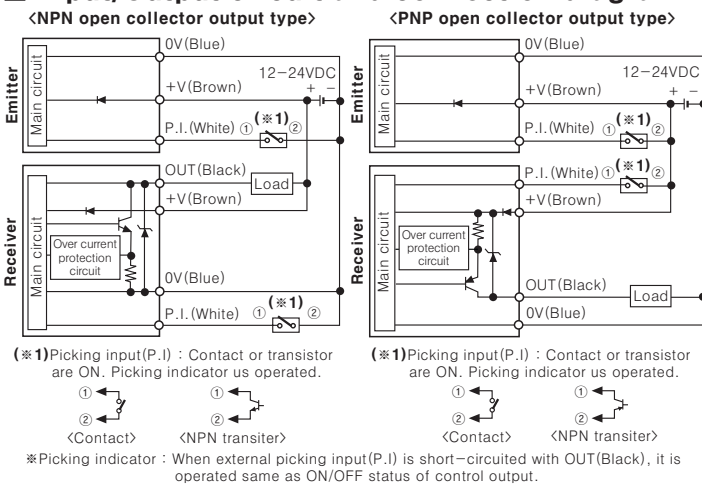
Model		BWPK25-05 / BWPK25-05P
Sensing type	Transmitted beam type	
Sensing distance	Long mode	0.1 ~ 3m
	Short mode	0.05 ~ 1m
Sensing target	Opaque materials of min. φ35mm	
Optical axis pitch	25mm	
Number of optical axis	5pcs	
Sensing width	100mm	
Power supply	12~24VDC ±10%(Ripple P-P:Max. 10%)	
Protection circuit	Built-in	
Current consumption	Emitter : Max. 60mA, Receiver : Max. 60mA	
Control output	NPN open collector output ⇨ Load current:Max. 150mA(Max. 30VDC), Residual voltage:Max. 1V PNP open collector output ⇨ Load current:Max. 150mA, Residual voltage:Min. 0.5VDC	
Operation mode	Switching of Light ON/Dark ON	
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 temperature	-10 ~ +55°C (at non-freezing status)
	Storage temperature	-20 ~ +60°C
	Ambient humidity	35 ~ 85%RH
	Storage humidity	35 ~ 85%RH
	Ambient illumination	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx
Noise strength	The square wave noise by the noise simulator (Voltage: ±240V, Period:10ms, Pulse width:1μs)	
Dielectric strength	1,000VAC 50/60Hz for 1minute	
Insulation resistance	Min. 20MΩ (500VDC)	
Vibration	1.5mm amplitude at frequency of 10~55Hz in each of X, Y, Z directions for 2 hours	
Shock	500m/s ² (50G) in X, Y, Z directions for 3 times	
Protection	IP40(IEC Standard)	
Material	Body:PC/ABS, Lens:PMMA	
Cable	Emitter : φ4.0mm, 3P, 2m / Receiver : φ4.0mm, 4P, 2m	
Accessory	Flat type bracket 2pcs, L type bracket 2pcs, Protect bracket 2pcs	
Unit weight	Approx. 0.25kg	

*Bracket is optional.

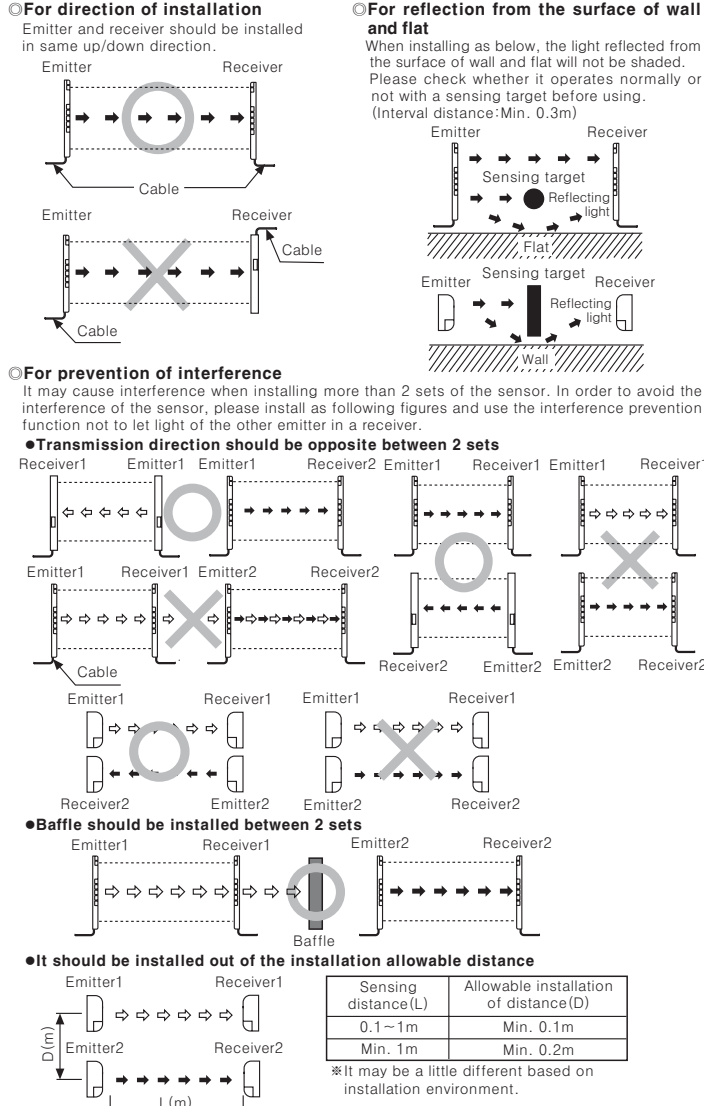
Dimensions



Input/Output circuit and connection diagram



Installations



Function

① Switching function of Long/Short mode (Selectable sensing distance)
The rated sensing distance is 3m for Long mode, 1m for short mode. It minimizes interference setting as short mode when using more than 3 sets closely together.

② Interference protection function
In case of using 2 pcs of sensor in serial or parallel in order to extend sensing width, the sensing will be failure because as light interference. This function is to avoid the light interference as operating a sensor in transmission frequency A and another sensor in transmission frequency B to protect these kinds of failures.

③ Switching function of Light ON / Dark ON
The control output is ON when it is lighted in Light ON mode and it is ON when it is shaded in Dark ON mode. It is available to select with user's preference.

④ Switching function of Lighting / Flickering of Picking indicator
Select the indication method of operating indicator LED to make out work sensing operation more easily.

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

Operation mode switch(Emitter + Receiver)	Frequency A, B indicator(Emitter)
FREQ. A	Frequency A(Green) Frequency B(Green)
FREQ. B	Frequency A(Green) Frequency B(Green)

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

Operation mode switch(Emitter + Receiver)	Picking indicator operation
GLOW	Lighting indicator
BLINK	Flickering indicator

Inspection/Solution for malfunction

Malfunction	Caution	Solution
Non-operation	Power Cable disconnection, incorrect connection Rated connection failure	Supply rated power Check the wiring Use within rated sensing distance
Non-operation in sometimes	Pollution by dirt of sensor cover Connector connection failure	Remove dirt by soft brush or cloth Check the assembled part of the connector
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 within rated sensing distance Remove the obstacle Put away the strong electric wave or noise generator.
LED display for over current	Control output line shorted Over load	Check the wiring Check the rated load capacity

Caution for using

- Please make the interval enough between 2 sets or exchange the positions of emitter and receiver in order to remove interference occurring by the emitter of another set when using emitter/receiver more than 2 sets closely.
 - Please install this sensor at proper height(Min. approx. 0.3m) from flat part as malfunction may be caused due to certain amount of light received by reflecting light when installing it close to flat part.
 - Please avoid fluorescent light with high frequency, high speed start or signal light affecting to sensing ability.
 - Please use a single conduit or separated wiring as it may cause malfunction or mechanical problem when installing the wiring of the sensor with high voltage lines.
 - Please avoid places with corrosive gas or dust, or it may cause malfunction.
 - Please make power and output line shorten as possible, or it may cause malfunction by surge etc.
 - Please clean the sensor cover with dry cloth when it is stained by dirt etc., but don't use organic materials such as thinners.
 - Please ground F.G terminal as following figure and install the condenser for removing noise between 0V and F.G terminal when using switching power supply.
- *It may cause malfunction if above instructions are not followed.

Major products

- PROXIMITY SENSOR
- PHOTOELECTRIC SENSOR
- AREA SENSOR
- FIBER OPTIC SENSOR
- DOOR/DOOR SIDE SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- TEMPERATURE/HUMIDITY TRANSDUCER
- TACHO/LINE SPEED/PULSE METER
- DISPLAY UNIT
- SENSOR CONTROLLER
- SWITCHING POWER SUPPLY
- GRAPHIC PANEL
- STEPPING MOTOR & DRIVER & CONTROLLER
- LASER MARKING SYSTEM(CO₂, Nd:YAG)

Autonics Corporation
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Satisfiable Partner For Factory Automation

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