


Picking sensor

■ Features

- Plastic injection case
- Slim body (W30×H10.5×140mm)
- Wide range of sensing distance (0.1~3m, 0.05~1m)
- Mutual interference prevention (FREQ A/B)
- Light ON/Dark ON switching mode
- Picking indicator includes
- IP40 rated waterproof structure (IEC standard)

 Please read "Caution for your safety" in operation manual before using.



■ Specifications

Model	NPN open collector output	BWPK-25-05
	PNP open collector output	BWPK-25-05P
Sensing type		Transmitted beam type
Sensing distance	Long mode	0.1 ~ 3m
	Short mode	0.05 ~ 1m
Sensing target		Opaque materials of min. ϕ 35mm
Optical axis pitch		25mm
Number of optical axis		5pcs
Sensing width		100mm
Power supply		12~24VDC \pm 10% (Ripple P-P:Max. 10%)
Protection circuit		Includes
Current consumption		Emitter : Max. 50mA, Receiver : Max. 50mA
Control output		<ul style="list-style-type: none"> • NPN open collector output \Rightarrow Load voltage:Max. 30VDC, Load current:Max. 150mA, Residual voltage:Max. 1V • PNP open collector output \Rightarrow Load current:Max. 150mA, Output voltage:Min. (Power supply-2.5)VDC
Operation mode		Switching of Light ON/Dark ON
Response time		Max. 30ms
Light source		Infrared LED (850nm modulated)
Interference protection		Interference protection by master/slave function
Protection circuit		Reverse power polarity, Output short-circuit (Overcurrent) protection
External picking input		Non-contact or contact input <ul style="list-style-type: none"> • 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 (at non-freezing status)
	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: \pm 240V, Period:10ms, Pulse width:1 μ s)
Dielectric strength		1,000VAC 50/60Hz for 1minute
Insulation resistance		Min. 20M Ω (500VDC mega)
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 : Acrylic
Unit weight		Approx. 250g

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

(O) Graphic panel

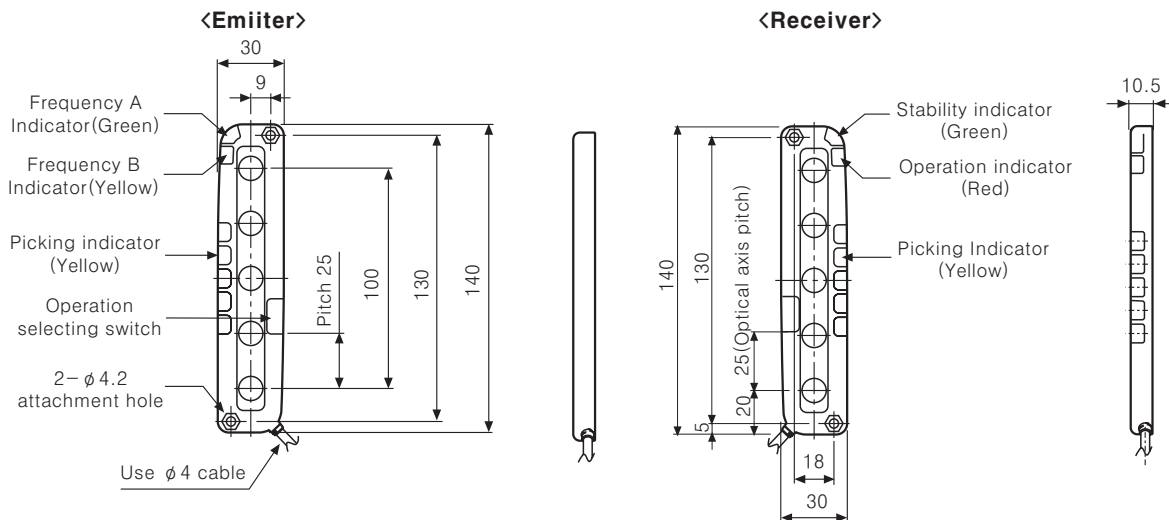
(P) Production stoppage models & replacement

BWPK Series

Dimensions

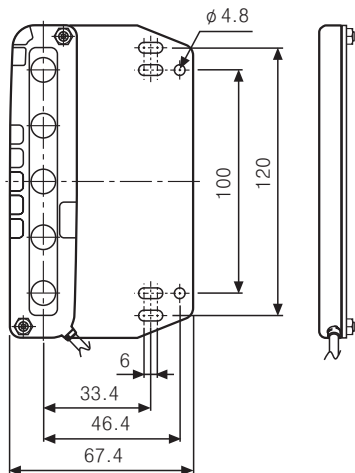
Product dimension

(Unit:mm)

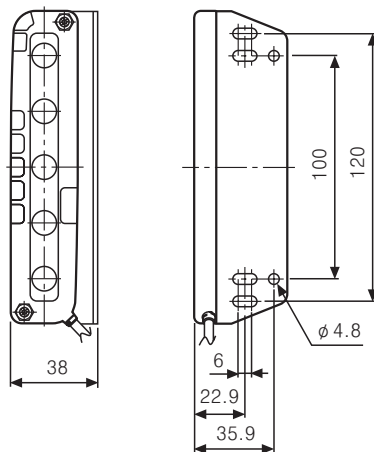


Bracket mounting dimension

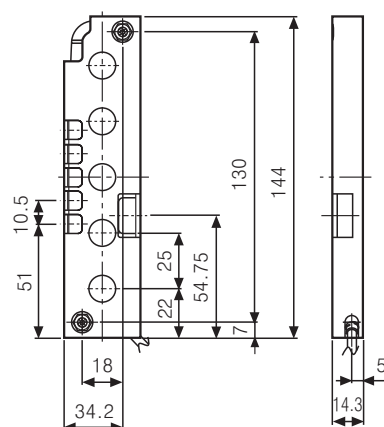
Bracket A



Bracket B

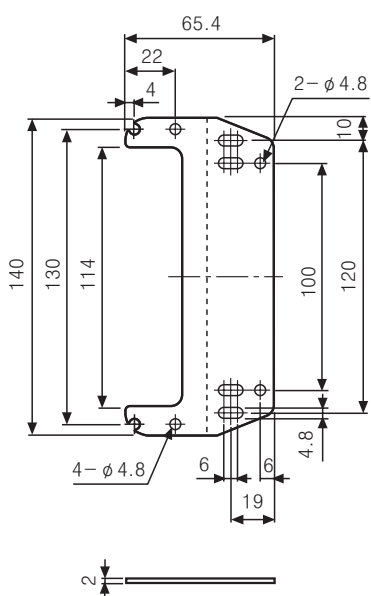


Protection Bracket

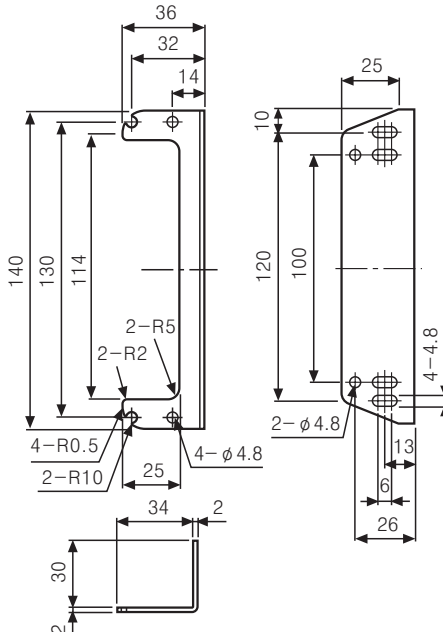


Bracket dimension (It is sold separately.)

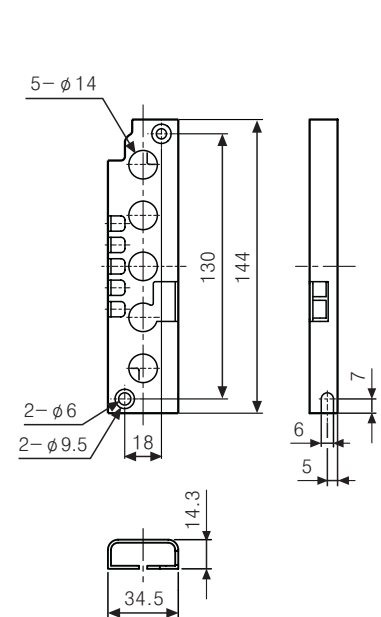
Bracket A (BK-BWPK-ST)



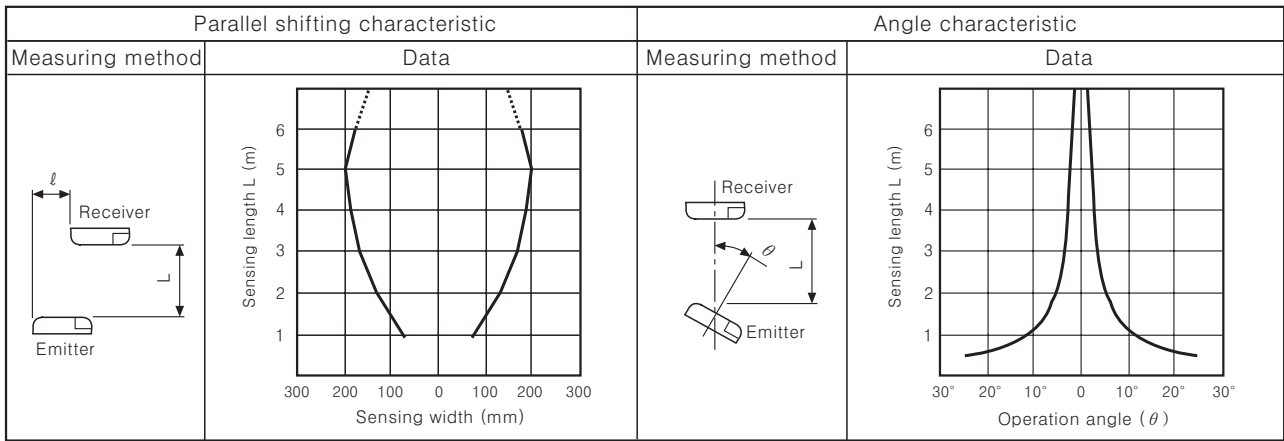
Bracket B (BK-BWPK-L)



Protection Bracket (BK-BWPK-P)

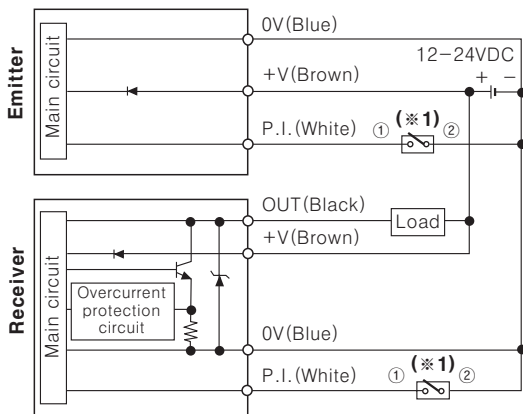


Feature data



Input/Output circuit and connection diagram

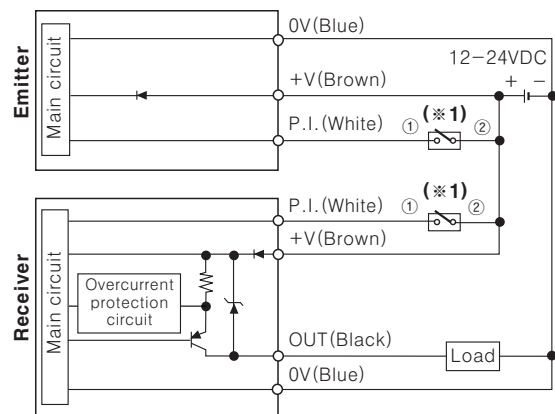
<NPN open collector output type>



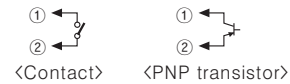
(※1) Picking input (P.I.) : Contact or transistor are ON.
Picking indicator us operated.



<PNP open collector output type>

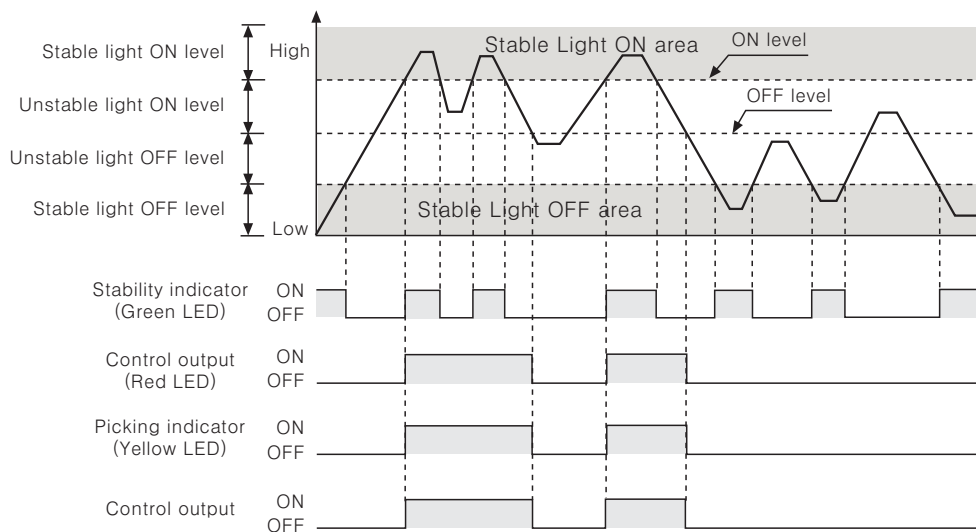


(※1) Picking input (P.I.) : Contact or transistor are ON.
Picking indicator us operated.



※Picking indicator: When external picking input (P.I) is short-circuited with OUT (Black), it is operated same as ON/OFF status of control output.

Timing diagram of operation

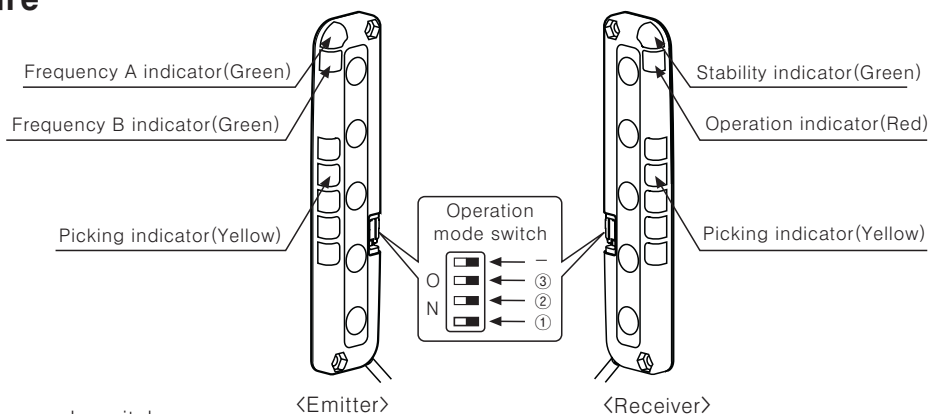


※1. Picking indicator is operated connecting output to picking input, or it will be OFF regardless of operation mode.
2. The above diagram is for Light ON mode, it is operated reversely in Dark ON.

- (A) Counter
- (B) Timer
- (C) Temp. controller
- (D) Power controller
- (E) Panel meter
- (F) Tacho/ Speed/ Pulse meter
- (G) Display unit
- (H) Sensor controller
- (I) Switching power supply
- (J) Proximity sensor
- (K) Photo electric sensor
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BWPK Series

Structure



◎ Operation mode switch

No	Function	Switch OFF	Switch ON
①	Transmission frequency selection	Frequency A	Frequency B
②	Operation indicator selection	Lighting indicator	Flickering indicator
③	Emitter	Sensing distance mode selection	Long mode
	Receiver	Operation mode selection	Light ON mode
			Short mode
			Dark ON mode

Functions

◎ 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.

	Operation mode switch (Emitter)	Rated sensing distance
Long mode	④ ③ ② ① Long	3m
Short mode	④ ③ ② ① Short	1m

◎ Interference protection function

In case of using 2 pcs of sensor in serial or parallel in order to extend sensing width, the detection can be failed because of their 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.

	Operation mode switch (Emitter + Receiver)	Frequency A, B indicator (Emitter)
Sensor A (Transmission frequency A)	④ ③ ② ① FREQ.A	Frequency A (Green) Frequency B (Green)
Sensor B (Transmission frequency B)	④ ③ ② ① FREQ.B	Frequency A (Green) Frequency B (Green)

◎ Switching Light-ON / Dark-ON

In Light-ON mode, the control output is ON when the target is missing. In Dark-ON mode, the control output is ON when the target is present.

	Operation mode switch (Receiver)	Control output operation
Light ON	④ ③ ② ① Light ON	It is ON when it is lighted.
Dark ON	④ ③ ② ① Dark ON	It is ON when it is shaded.

◎ Switching Steady / Flashing Light of Picking indicator

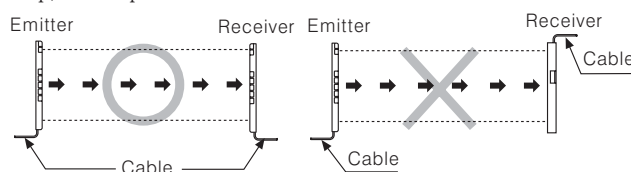
Select the indication method of operating indicator LED to make out work sensing operation more easily.

	Operation mode switch (Emitter + Receiver)	Picking indicator operation
GLOW	④ ③ ② ① GLOW	Lighting indicator
BLINK	④ ③ ② ① BLINK	Flashing indicator

Installation

◎ For direction of installation

Emitter and receiver should be installed in same up/down position.

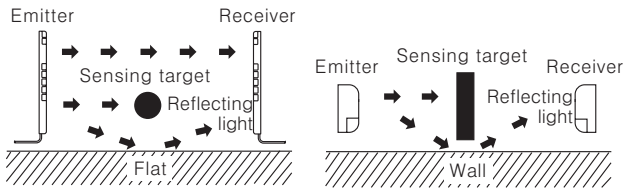


◎ Reflective Surface Interference

In the case shown below, the beam can be reflected from the wall or flat surface and exposed to the receiver. Please pre-test the operation of sensor with a target under this condition.

(Interval distance : Min. 0.3m)

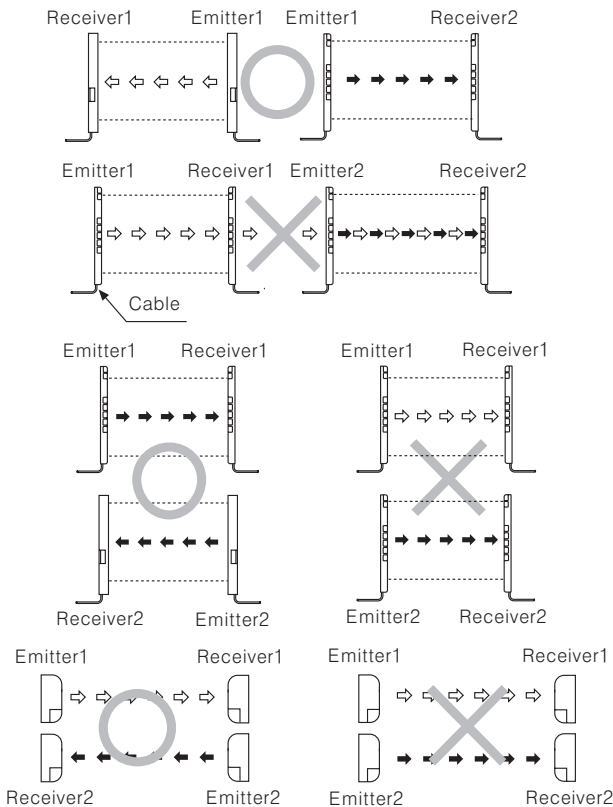
Area Sensor



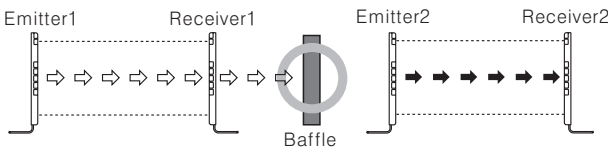
○ For prevention of interference

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..

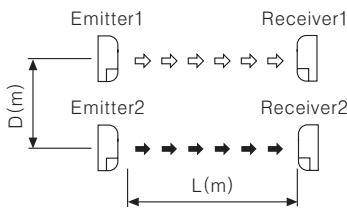
● Transmission direction should be opposite between 2 sets.



● Baffle should be installed between 2 sets.



● Keep sufficient distance between two sets of sensors to avoid mutual interference.



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

※ There will be small difference depending on installing environment.

■ Operation indicator

Item	Emitter		Receiver			Control output
	Indicator		Indicator			
	Green	Picking indicator	Green	Red	Picking indicator	
Power supply	☀	●	—	—	—	—
FREQ. A operation	☀	●	—	—	—	—
FREQ. B operation	☀	☀	—	—	—	—
Stable light ON level	—	☀	☀	☀	☀	ON
Flashing function ON	—	◐	☀	☀	◐	ON
Unstable light ON level	—	☀	●	☀	☀	ON
Unstable light OFF level	—	●	●	●	●	OFF
Stable light OFF level	—	●	☀	●	●	OFF
Overcurrent	—		◐	◐	●	OFF

Display classification list	
☀	Light on
●	Light off
◐	Flashing by 0.3 sec.
◐ ◐	Flashing simultaneously by 0.3 sec.

※ Picking Indicator operates when output is connected to picking input. (When it is not connected, picking indicator is OFF regardless of operation modes.)

※ Red indicator, Picking indicator, Control output are for Light ON mode in Stable light ON, Unstable light ON, Unstable light OFF and Stable light OFF. For Dark ON mode, they operate in opposite. (When malfunction of synchronous line or overcurrent occurs, control output is OFF in both modes.)

■ Inspection/Solution for malfunction

Malfunction	Caution	Solution
Non-operation	Power supply	Supply rated power
	Cable disconnection, incorrect connection	Check the wiring
	Rated connection failure	Use within rated sensing distance
Irregular operation	Contamination by dirt on sensor cover	Remove dirt by soft brush or cloth
	Connector connection failure	Check the assembled part of the connector
Control output is OFF even though there is not a target object.	Out of rated sensing distance	Use within rated sensing distance
	There is an obstacle that cut off the light between emitter and receiver	Remove the obstacle
	There is a strong electric wave or noise generated by motor, electric generator, high voltage line etc.)	Put away the strong electric wave or noise generator.
LED display for overcurrent	Shorted control output line	Check the wiring
	Over load	Check the rated load capacity

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