Autonics

THIN TYPE AREA SENSOR **BWP SERIES**

INSTRUCTION MANUAL



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

Safety Considerations

XPlease observe all safety considerations for safe and proper product operation to avoid hazards. st Λ 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.

- 1. 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.
- 2. Do not connect, repair, or inspect the unit while connected to a power source
- Failure to follow this instruction may result in fire.
- 3. Check 'Connections' before wiring.
 Failure to follow this instruction may result in fire.

 4. Do not disassemble or modify the unit.
- 5. This product is not safety sensor and does not observe any domestic nor international safety

Do not use this product with the purpose of injury prevention or life protection, as well as in the place where economic loss maybe present.

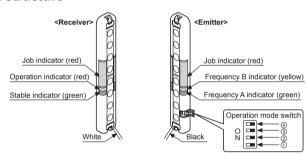
⚠ Caution

- 1. Use the unit within the rated specifications.
- Failure to follow this instruction may result in fire or product damage.

 2. Use dry cloth to clean the unit, and do not use water or organic solvent Failure to follow this instruction may result in fire.
- 3. 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.

 4. 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



- 01	peration mode owiton					
No.	Function	Switch OFF	Switch ON			
1	Selection of transmission frequency	Frequency A	Frequency B			
2	Light ON/Dark ON selection	Light ON operation	Dark ON operation			
3	Selection light/flashing for Job indicator	Job indicator light	Job indicator flashing			
4	Selection of JOB/TEST	NORMAL mode	TEST mode			

Timing Diagram Operation Stable light ON OFF level Unstable light ON light level Unstable light OFF level Stable light OFF Stable indicator (green) OFF Operation indicator (red) OFF ON Job indicator (red) OFF Control output OFF

ms of operation indicator, job indicator, and control output are the state of operation for Light ON, but in case of Dark ON, it is opposite operation against Light ON mode.

Operation Indicator

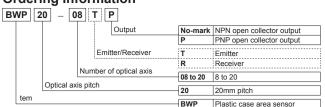
	Emitter			Receiver			
tem	Indicator		Indicator			Control	
tem	Green	Yellow	Job indicator	Green	Red	Job indicator	output
Power ON	Φ	•	T-	_	1—	—	_
FREQ. A operation	≎	•	_	_	_	—	_
FREQ. B operation	≎	≎	_	_	_	—	_
TEST	▶	•	≎	≎	•	♦	OFF
Stable light ON	_	1—	•	≎	♦	•	ON
Unstable light ON	—	T—	•	•	≎	•	ON
Unstable light OFF	_	T—	≎	•	•	≎	OFF
Stable light OFF	_	T—	₽	⇔	•	≎	OFF
Flashing function ON	_	—	1	≎	•	0	OFF
Synchronous line malfunction	_	I—	≎	(•	♦	OFF
Over current			74			75	OEE

Display	Display classification list			
Light out				
Flashing by 0 3 sec				
	Flashing simultaneously by 0 3 sec			

descriptions (catalog, homepage).

- XThe 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

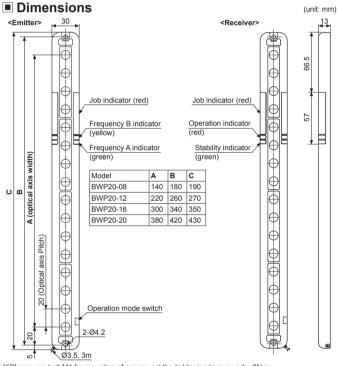
Ordering Information



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

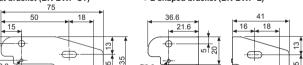
Specifications

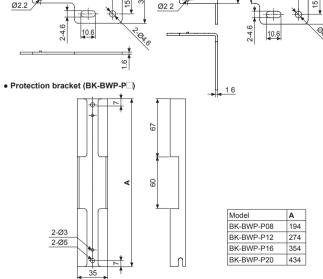
	NPN open collector output	BWP20-08	BWP20-12	BWP20-16	BWP20-20		
Model	PNP open						
	collector output	BWP20-08P	BWP20-12P	BWP20-16P	BWP20-20P		
Sensing		Through-beam type					
	distance	0.1 to 5m					
Sensing		Opaque materials of min. Ø30mm					
	axis pitch	20mm					
	of optical axis	8 12 16 20					
Sensing		140mm	220mm	300mm	380mm		
Power s					30011111		
	consumption	12-24VDC== ±10% (ripple P-P: max. 10%) Emitter: max. 80mA, receiver: max. 80mA					
Current	Consumption	NPN or PNP open collector output					
Control	output	Load voltage: max. 30VDC= Load current: max. 150mA					
Control output		Residual voltage - NPN: max. 1VDC, PNP : max. 2 5VDC					
	on circuit	Reverse polarity protection circuit, output short over current protection circuit					
Operation	on mode	Switching of Light ON/Dark ON by switch					
Response time		Max. 6ms (frequency B selection is max. 7ms)					
Light so	urce	Infrared LED (850nm modulated)					
Synchronization type		Timing method by synchronous line					
Interfere	ence protection	Interference protection by transmission frequency selection					
Environ-	Ambient illumination	Ambient light: max. 10,000lx (received light side illumination)					
ment	Ambient temperature	-10 to 55°C, stora	-10 to 55°C, storage: -20 to 60°C				
mem	Ambient humidity	35 to 85%RH, sto	35 to 85%RH, storage: 35 to 85%RH				
Noise im	nmunity	±240V the square wave noise (pulse width 1μs) by the noise simulator					
Dielectri	c strength	1,000VAC 50/60Hz for 1 minute					
Insulatio	n resistance	Over 20MΩ (at 500VDC megger)					
Vibration Shock Protection structure		1.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours					
		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times					
		IP40 (EC standard)					
		Case: Polycarbonate/Acrylonitrile-Butadiene-Styrene,					
Material		Sensing part: Polymethyl methacrylate					
Cable		Ø3.5mm, 4-wire, 3m (AWG24, core diameter: 0.08mm, number of cores: 40,					
Cable		insulator diameter: Ø1mm)					
Approval Weight ^{ж1}		C€					
		Approx. 480g (approx. 280g)	Approx. 520g (approx. 320g)	Approx. 620g (approx. 360g)	Approx. 680g (approx. 430g)		
×1. The	weight includes page				(approx. 430g)		
	mperature or humid				or condensation		
× me te	inperature of fluilliu	ity member in El	TVII OTITICALE	sa a non neezing c	n condensation.		



※Please use bolt M4 for mounting of sensor, set the tightening torque under 2N⋅m.

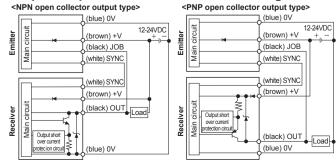
<Bracket> sold separately • Flat bracket (BK-BWP-ST)





Input/Output Circuit and Connection Diagram

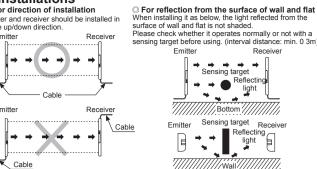
13 5 **▼ ▶**



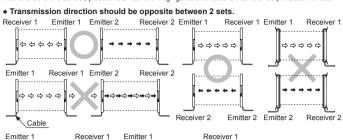
XIf the receiver OUT (black) line and the emitter JOB (black) line are not connected each other, the job indicator of the emitter is not operated and maintains the light status.

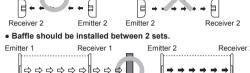
Installations

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



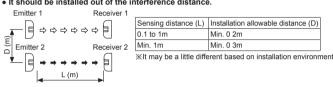
For protection of interference t may cause interference when installing more than 2 sets of the sensor. In order to avoid the interference of the sensor, please install as following figures and use the interference protection function





• It should be installed out of the interference distance

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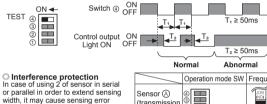
*Avoid using the unit in the place where the sensor is exposed directly to the fluorescent light with high speed start or high frequency.

Functions

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TEST (stop transmission function)
When selecting TEST mode, emit is stopped and green&yellow LED of emitter flashes.
t is available to check whether sensor operates properly with stopping the transmission in TEST mode.
t is changed to light OFF status when emit the transmission is stopped, control output is OFF in Light
ON mode and ON in Dark ON mode.

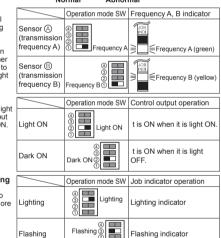
Control output pulse by TEST input



because of light interference.

This function is operating a sensor in transmission frequency A and another sensor in transmission frequency B to avoid these sensing errors by the light interference © Light ON/Dark ON mode
The control output is ON when it is light
ON in Light ON and the control output
is ON when it is light OFF in Dark ON.
t is available to select with user's
preference.

Switching of Lighting/Flashing of Job indicator
 Job indicator is lighting or flashing to make out work sensing operation more capilly.



Troubleshooting

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

Cautions during Use

- 1. Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents. 2. 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- 3. Use the product, 1 sec after supplying power.
- When using separate power supply for the sensor and load, supply power to sensor first.

 4. 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.
- 5. When connecting a DC relay or other inductive load, remove surge by using diodes or varistors.
- 6. Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge
- 7. This unit may be used in the following environments.

 ①Indoors (in the environment condition rated in 'Specifications')

 ②Altitude max. 2,000m
- ③Pollution degree 2 (4) Installation category II

■ Major Products

Photoelectric Sensors Temperature Controllers
Fiber Optic Sensors Temperature/Humidity Transducers
Door Sensors SSR/Power Controllers
Door Side Sensors Timers
Proximity Sensors Timers
Pressure Sensors Trachometer/Pulse (Rate) Meters
Proximity Genoders Sensors Tachometer/Pulse (Rate) Meters
Connector/Sockets Sensors Society Sensor Sensors Technology Sensor Sensors Sensors Sensors Sensors Sensor Sensors Sensor Sen

Control Switches/Lamps/Buzzers

I/O Terminal Blocks & Cables

Stepper Motors/Drivers/Motion Controllers

Graphic/Logic Panels

Field Network Devices

Laser Marking System (Fiber, Co₂, Nd: YAG)

Laser Welding/Cutting System

DRW161003AC