

# BW Series

## INSTRUCTION MANUAL

# Autonics

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Failure to follow this instruction may result in fire, relay broken, contact melt insulation failure or contact failure.

- Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
- 12 - 24 VDC≡ 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 0 V 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.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

- Be sure to install this product by following the usage environment, location, and specified ratings. Consider the listed conditions below.
- Installation environment and background (reflected light)
- Sensing distance and sensing target
- Direction of target's movement
- Feature data
- If the installation environment has reflected light from the wall or floor, a interval distance of at least 0.5 m is required.
- When installing multiple sensors closely, it may result in malfunction due to mutual interference. Install it by referring to the interference protection and the installation method in the manual.
- Do not use in places where the light-receiving sensor is exposed to direct sunlight or where the ambient illumination is higher than the specification.
- Do not impact with a hard object or bend the cable excessively. That could decrease the product's water resistance.
- Use this product after the test. Check whether the indicator works appropriately for the positions of the detectable object.

- OCP (over current protection), SCP (short circuit protection)

The diagram shows the timing of the receiver's outputs relative to the received light signal. The light signal is a series of pulses. The receiver's outputs are as follows:

- ON LED (green):** ON when the light signal is above the ON Level.
- UNSTABLE LED (yellow):** ON when the light signal is between the ON Level and the OFF Level.
- OFF LED (red):** ON when the light signal is below the OFF Level.
- Control output (Light ON):** ON when the light signal is above the OFF Level.

01) Repeated twice, flashes twice at 0.5 second intervals

Item		Emitter indicator		Receiver indicator			Control output
		Green	Red	Green	Yellow	Red	
Power ON				-	-	-	-
MASTER operation				-	-	-	-
SLAVE operation				-	-	-	-
TEST input				-	-	-	-
Break of emitter				-	-	-	-
Break of emitting element							OFF
Installation mode	Normal installation						OFF
	Hysteresis section						OFF
	Abnormal installation						OFF
Stable light ON		-	-				ON
Unstable light ON		-	-				ON
Unstable light OFF		-	-				OFF
Stable light OFF		-	-				OFF
Break of receiver		-	-				OFF
Control output over current		-	-				OFF
Malfunction of Synchronous line		-	-				OFF
Synchronous line connection error		-	-				OFF
Optical axis misalignment alarm		-	-				-

01) Connect '(TEST)M/S' of SLAVE emitter to 'SYNC' of MASTER. Refer to the product manual.

1. Inputting 0 V to 4th terminal (black, MODE) of emitter, supply power to the product to enter to the installation mode.
2. After entering installation mode, install the unit at the position where green LED of receiver operation indicator turns ON.
3. After installation, disconnect 4th terminal (black, MODE) of emitter and re-supply power to the unit.

Malfunction	Cause	Troubleshooting
Non-operation	Power supply	Supply the rated power.
	Cable incorrect connection, or disconnection	Check the wiring connection.
	Out of rated sensing distance	Use it within rated sensing distance.
Non-operation in sometimes	Pollution by dirt of 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 the rated sensing distance	Use it within the rated sensing distance.
	There is an obstacle to cut off the emitted light between emitter and receiver.	Remove the obstacle.
	There is strong electric wave or noise generator such as motor, electric generator, or high voltage line, etc.	Put away the strong electric wave or noise generator.
LED displays for break of emitter	Break of emitter	
LED displays for break of receiver	Break of receiver	Please contact customer service center.
LED displays for break of emitting element	Break of emitting element	
LED displays for malfunction of synchronous line	Synchronous line incorrect connection or disconnection	Check the wiring connection.
	Break of synchronous circuit of emitter or receiver	Please contact customer service center.
LED displays for failure of emitter	Break of emitter	Treat after checking the emitter display LED.
LED displays for over current	Control output line is shorted out.	Check the wiring connection.
	Over load	Check the rated load capacity.