

Autonics

Cylindrical type Photoelectric Sensor

BR SERIES

INSTRUCTION MANUAL

Thank you for choosing our 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 personal injury, fire or economic loss.
- Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
Failure to follow this instruction may result in explosion or fire.
- Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire.
- 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.

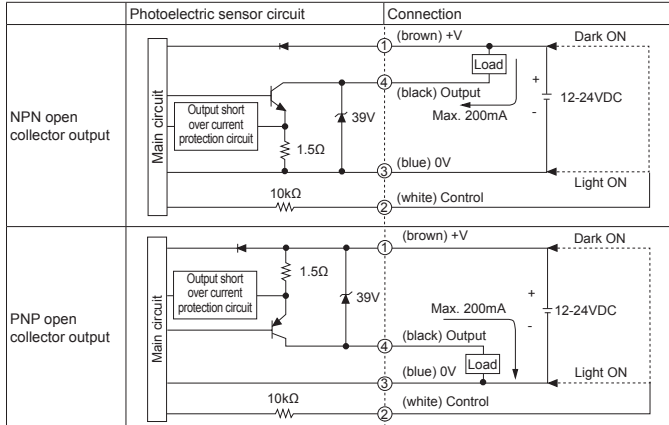
▲ Caution

- 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.

■ Model

Model	Sensing type	Sensing distance	Case	Power supply	Operation mode	Connection	Control output (■ type)
BRP200-DDTN-■	Narrow beam reflective type	200mm	Plastic	12-24VDC	Light ON/ Dark ON (control wire)	Cable type	No mark
BRP200-DDTN-C-■						Connector type	NPN open collector output
BR200-DDTN-■	Reflective type	200mm	Metal	12-24VDC	Light ON/ Dark ON (control wire)	Cable type	P
BR200-DDTN-C-■						Connector type	PNP open collector output

■ Control Output Circuit Diagram



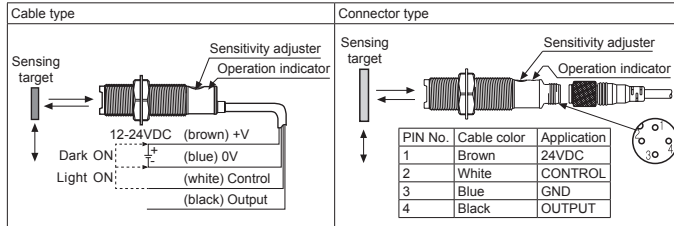
※Before using this unit, select Light ON/Dark ON with control wire.
(Light ON: connect control wire with 0V/Dark ON: connect control wire with +V)
※If short-circuit the control output terminal or supply current over the rated specification, normal control signal is not output due to the output short over current protection circuit.
※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).

■ Specifications

Model	NPN open collector output	BRP200-DDTN(-C)	BR200-DDTN(-C)
	PNP open collector output	BRP200-DDTN(-C)-P	BR200-DDTN(-C)-P
Case	Plastic		Metal
Sensing type	Narrow beam reflective type		
Sensing distance*1	200mm		
Sensing target	Opaque, translucent materials		
Hysteresis	Max. 20% at rated sensing distance		
Response time	Max. 1ms		
Power supply	12-24VDC±10% (ripple P-P: max. 10%)		
Current consumption	Max. 45mA		
Light source	Infrared LED (850nm)		
Sensitivity adjustment	Sensitivity adjuster		
Operation mode	Selectable Light ON or Dark ON by control wire (white)		
Control output	NPN or PNP open collector output • Load current: max. 200mA • Residual voltage - NPN: max. 1VDC±, PNP: max. 2.5VDC		
Protection circuit	Power reverse polarity protection circuit, output short over current protection circuit		
Indicator	Operation indicator: red LED		
Connection	Cable type, connector type		
Insulation resistance	Over 20MΩ (at 500VDC megger)		
Noise immunity	±240V the square wave noise (pulse width: 1μs) by the noise simulator		
Dielectric strength	1,000VAC 50/60Hz for 1 min		
Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Shock	500m/s ² (approx. 50G) in each X, Y, Z direction for 3 times		
Environment	Ambient illu. Sunlight: max. 11,000lx, Incandescent lamp: max. 3,000lx (receiver illumination)		
	Ambient temp. -10 to 60°C, storage: -25 to 75°C		
	Ambient humi. 35 to 85%RH, storage: 35 to 85%RH		
Protection structure	IP66 (IEC standard)		
Material	Case: Polyamide (black), Sensing part: Polycarbonate Lens		Case: Brass, Ni-plate, Sensing part: Polycarbonate Lens
Cable	Cable type: Ø5mm, 4-wire, 2m (AWG22, core diameter: 0.08mm, number of cores: 60, insulator out diameter: Ø1.25mm) Connector type: M12 connector		
Accessory	M18 fixing nut: 2, adjustment screwdriver		M18 fixing nut: 2, washer: 1, adjustment screwdriver
Approval	CE		
Weight*2	Cable type: Approx. 140g (approx. 100g) Connector type: Approx. 70g (approx. 30g)		Approx. 160g (approx. 120g) Approx. 90g (approx. 50g)

※1: Non-glossy white paper 100×100mm.
※2: The weight includes packaging. The weight in parenthesis is for unit only.
※Tightening torque for connector is 0.39 to 0.49N·m.
※The temperature or humidity mentioned in Environment indicates a non freezing or condensation.

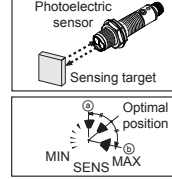
■ Connections



■ Installation and Sensitivity Adjustment

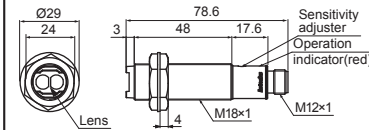
Install the sensor to the desired place and check the connections. Supply the power to the sensor and adjust the optical axis and the sensitivity as following.
When using photoelectric sensors closely over two units, it may result in malfunction due to mutual interference.
When installing the product, tighten the screw with a tightening torque of 0.39N·m for BRP and to 14.7N·m for BR.

- The sensitivity should be adjusted depending on a sensing target or mounting place.
- Set the target at a position to be detected by the beam, then turn the Sensitivity adjuster until position ① where the operation indicator turns ON from min. position of the Sensitivity adjuster.
- Take the target out of the sensing area, then turn the Sensitivity adjuster until position ② where the operation indicator turns ON. If the indicator does not turn ON, max. position is ③.
- Set the Sensitivity adjuster at the center of two switching position ①, ②.
※Be sure that it can be different by size, surface and gloss of target.

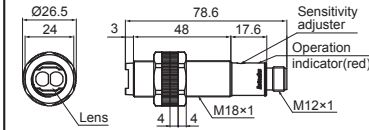


■ Dimensions

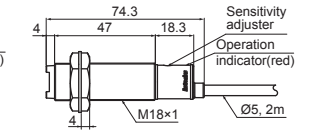
• BR200-DDTN-C(-P)



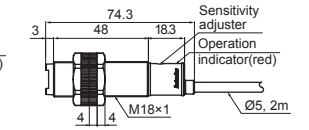
• BRP200-DDTN-C(-P)



• BR200-DDTN(-P)

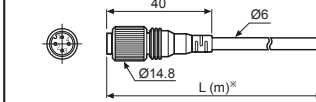


• BRP200-DDTN(-P)

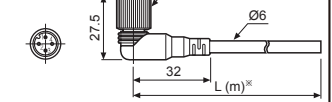


• Connection cable (sold separately)

• CIDH4-□

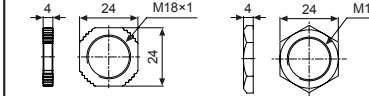


• CLDH4-□



※Specification of Connector Cable: Ø6mm, 4-wire, 2m/3m/5m/7m (AWG22, core diameter: 0.08mm, number of cores: 60, insulator out diameter: Ø1.65mm)

• M18 fixing nut



■ Operating Mode

Operation mode	Light ON	Dark ON
Receiver operation	Received light	Received light
Operation indicator (red LED)	ON	OFF
Transistor output	ON	OFF

※The transistor output will be held OFF for 0.5 sec after supplied power in order to prevent malfunction of this photoelectric sensor.

■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- When connecting a DC relay or other inductive load to the output, remove surge by using diodes or varistors.
- Use the product, 0.5 sec after supplying power.
When using separate power supply for the sensor and load, supply power to sensor first.
- 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent inductive noise.
- 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 using sensor with the equipment which generates noise (switching regulator, inverter, servo motor, etc.), ground F.G. terminal of the equipment.
- This unit may be used in the following environments.
① Indoors (in the environment condition rated in 'Specifications')
② Altitude max. 2,000m
③ Pollution degree 2
④ Installation category II

■ Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connectors/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, CO₂, Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Pressure/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

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