

Cylindrical Photoelectric Sensors



BRQ Series (side sensing type) CATALOG

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Excellent noise immunity and minimal influence from ambient light
- Reverse power protection circuit, reverse output protection circuit, output short overcurrent protection circuit
- Mutual interference prevention function (except through-beam type)
- Sensitivity adjuster
- Light ON/Dark ON mode selectable by control wire
- Protection rating: IP67 (IEC standard)

Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

BRQ **P** **S** **①** - **②** **D** **T** **A** - **③** - **④**

① Sensing distance

Number: Sensing distance (unit: mm)
Number+M: Sensing distance (unit: m)

② Sensing type

T: Through-beam
P: Polarized retroreflective
D: Diffuse reflective

③ Connection

No mark: Cable type
C: Connector type

④ Control output

No mark: NPN open collector output
P: PNP open collector output

Product Components

Sensing type	Through-beam	Polarized retroreflective	Diffuse reflective
Product components	Product, instruction manual		
Reflector	-	MS-2S	-
Adjustment screwdriver	× 1	× 1	× 1
M18 fixing nut	× 4	× 2	× 2

Specifications

Model	BRQPS□-TDTA-□-□	BRQPS3M-PDTA-□-□	BRQPS□-DDTA-□-□
Sensing type	Through-beam	Polarized retroreflective	Diffuse reflective
Sensing distance	10 m 20 m	3 m ⁽⁰¹⁾	100 mm ⁽⁰²⁾ 400 mm ⁽⁰²⁾ 700 mm ⁽⁰²⁾
Sensing target	Opaque materials	Opaque materials	Opaque, translucent materials
Min. sensing target	≥ 7 mm	≥ 75 mm	-
Hysteresis	-	-	≤ 20% of sensing distance
Response time	≤ 1 ms		
Light source	Red	Red	Red
Peak emission wavelength	660 nm	660 nm	660 nm
Sensitivity adjustment	YES (Adjuster)	YES (Adjuster)	YES (Adjuster)
Mutual interference prevention	-	YES	YES
Operation mode	Light ON mode - Dark ON mode selectable (Control wire)		
Indicator	Operation indicator (yellow), stability indicator (green), power indicator (red) ⁽⁰⁴⁾		
Approval	CE, RoHS, EAC	CE, RoHS, EAC	CE, RoHS, EAC

01) Reflector (MS-2S)

02) Non-glossy white paper 100 × 100 mm

03) Non-glossy white paper 200 × 200 mm

04) Only for the emitter

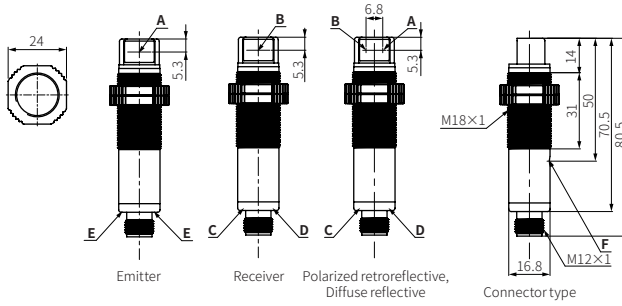
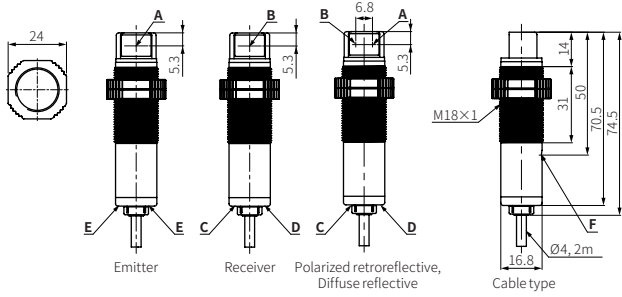
Unit weight (packaged)	Through-beam	Polarized retroreflective, Diffuse reflective
Cable type	≈ 120 g (≈ 170 g)	≈ 70 g (≈ 130 g)
Connector type	≈ 35 g (≈ 120 g)	≈ 25 g (≈ 120 g)

Power supply	10-30 VDC± ± 10% (ripple P-P: ≤ 10%)
Current consumption	It depends on the sensing type
Through-beam	Emitter: ≤ 20 mA, receiver: ≤ 20 mA
Reflective	≤ 30 mA
Control output	NPN open collector output / PNP open collector output model
Load voltage	≤ 30 VDC±
Load current	≤ 100 mA
Residual voltage	NPN: ≤ 2 VDC±, PNP: ≤ 2 VDC±
Protection circuit	Reverse power/output protection circuit, output short overcurrent protection circuit
Insulation resistance	≥ 20 MΩ (500 VDC± megger)
Noise immunity	±240 VDC± the square wave noise (pulse width: 1 μs) by the noise simulator
Dielectric strength	1,000 VAC~ 50/60 Hz for 1 min
Vibration	1.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Shock	500 m/s ² (≈ 50 G) in each X, Y, Z direction for 3 times
Ambient illuminance (receiver)	Sunlight: ≤ 11,000 lx, incandescent lamp: ≤ 3,000 lx
Ambient temperature	-25 to 60 °C, storage: -30 to 70 °C (no freezing or condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)
Protection rating	IP67 (IEC standard)
Connection	Cable type / Connector type model
Cable spec.	Ø 4 mm, 4-wire, (Emitter: 2-wire), 2 m
Wire spec.	AWG26 (0.52 mm, 20-core), insulator outer diameter: Ø 1 mm
Connector	M12 4-pin plug type
Material	Case: PC, lens and lens cover: PMMA

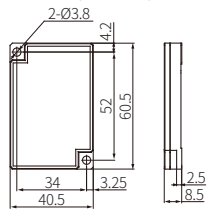
Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

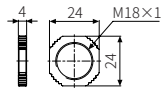
A	Optical axis of emitter	D	Stability indicator (green)
B	Optical axis of receiver	E	Power indicator (red)
C	Operation indicator (yellow)	F	Sensitivity adjuster



■ Reflector (MS-2S)



■ M18 fixing nut

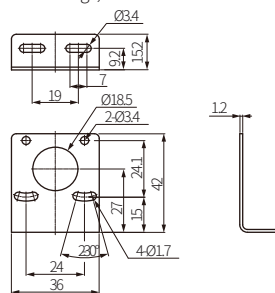


Sold Separately

- Reflector: MS Series
- Bracket: BK-BR-A
- Retroreflective tape: MST Series
- Connector cable, connector connection cable

Sold Separately: Bracket (BK-BR-A)

• Unit: mm, For the detailed drawings, follow the Autonics website.



Cylindrical Photoelectric Sensors



BRQ Series (front sensing type) CATALOG

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The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Excellent noise immunity and minimal influence from ambient light
- Reverse power protection circuit, reverse output protection circuit, output short overcurrent protection circuit
- Mutual interference prevention function (except through-beam type)
- Sensitivity adjuster
- Light ON/Dark ON mode selectable by control wire
- Various materials : Plastic, Metal (Ni-plated Brass), SUS316L
- Long sensing distance : 30 m (through-beam type)
- Body size
 - BRQT, BRQM : Standard
 - BRQP : Standard, Short body
- Protection rating
 - BRQT : IP67 (IEC standard), IP69K (DIN standard)
 - BRQM, BRQP : IP67 (IEC standard)

Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

BRQ ① ② - ③ **D** **T** ④ - ⑤ - ⑥

- ① **Material**
T: SUS316L
M: Brass, Ni-plate
P: Plastic
- ② **Sensing distance**
Number: Sensing distance (unit: mm)
Number+M: Sensing distance (unit: m)
- ③ **Sensing type**
T: Through-beam
P: Polarized retroreflective
D: Diffuse reflective
- ④ **Appearance**
A: Standard
B: Short body (plastic material model)
- ⑤ **Connection**
No mark: Cable type
C: Connector type
- ⑥ **Control output**
No mark: NPN open collector output
P: PNP open collector output

Product Components

Sensing type	Through-beam	Polarized retroreflective	Diffuse reflective
Product components	Product, instruction manual		
Reflector	-	MS-2A	-
Adjustment screwdriver	× 1	× 1	× 1
M18 fixing nut	× 4	× 2	× 2

Specifications

Model	BRQ□□-TDT□-□-□	BRQ□3M-PDT□-□-□	BRQ□□-DDT□-□-□
Sensing type	Through-beam	Polarized retroreflective	Diffuse reflective
Sensing distance	5 m 20 m 30 m	3 m ⁽⁰¹⁾	100 mm ⁽⁰²⁾ 400 mm ⁽⁰²⁾ 1 m ⁽⁰³⁾
Sensing target	Opaque materials	Opaque materials	Opaque, translucent materials
Min. sensing target	≥ Ø 7 mm	≥ Ø 75 mm	-
Hysteresis	-	-	≤ 20% of sensing distance
Response time	≤ 1 ms		
Light source	Red	Red	Infrared Red Red
Peak emission wavelength	660 nm	660 nm	850 nm 660 nm 660 nm
Sensitivity adjustment	YES (Adjuster)	YES (Adjuster)	YES (Adjuster)
Mutual interference prevention	-	YES	YES
Operation mode	Light ON mode - Dark ON mode selectable (Control wire)		
Indicator	Operation indicator (yellow), stability indicator (green), power indicator (red) ⁽⁰⁴⁾		
Approval	CE, RoHS, ENEC	CE, RoHS, ENEC	CE, RoHS, ENEC

- 01) Reflector (MS-2A)
- 02) Non-glossy white paper 100 × 100 mm
- 03) Non-glossy white paper 300 × 300 mm
- 04) Only for the emitter

Unit weight (packaged)	Material	Through-beam	Polarized retroreflective, Diffuse reflective
Cable type	SUS316L	≈ 140 g (≈ 220 g)	≈ 70 g (≈ 150 g)
	Brass, Ni-plate	≈ 140 g (≈ 220 g)	≈ 70 g (≈ 150 g)
	Plastic	≈ 110 g (≈ 160 g)	≈ 60 g (≈ 120 g)
Connector type	Plastic (short)	≈ 100 g (≈ 150 g)	≈ 50 g (≈ 120 g)
	SUS316L	≈ 50 g (≈ 160 g)	≈ 30 g (≈ 140 g)
	Brass, Ni-plate	≈ 50 g (≈ 160 g)	≈ 30 g (≈ 140 g)
	Plastic	≈ 25 g (≈ 110 g)	≈ 15 g (≈ 110 g)
	Plastic (short)	≈ 20 g (≈ 100 g)	≈ 10 g (≈ 100 g)

Power supply	10-30 VDC ± ±10% (ripple P-P: ≤ 10%)
Current consumption	It depends on the sensing type
Through-beam	Emitter: ≤ 20 mA, receiver: ≤ 20 mA
Reflective	≤ 30 mA
Control output	NPN open collector output / PNP open collector output model
Load voltage	≤ 30 VDC ±
Load current	≤ 100 mA
Residual voltage	NPN: ≤ 2 VDC ±, PNP: ≤ 2 VDC ±
Protection circuit	Reverse power/output protection circuit, output short overcurrent protection circuit
Insulation resistance	≥ 20 MΩ (500 VDC ± megger)
Noise immunity	±240 VDC ± the square wave noise (pulse width: 1 μs) by the noise simulator
Dielectric strength	1,000 VAC ~ 50/60 Hz for 1 min
Vibration	1.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Shock	500 m/s ² (≈ 50 G) in each X, Y, Z direction for 3 times
Ambient illuminance (receiver)	Sunlight: ≤ 11,000 lx, incandescent lamp: ≤ 3,000 lx
Ambient temperature	-25 to 60 °C, storage: -30 to 70 °C (no freezing or condensation)
Ambient humidity	35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)
Protection rating	IP67 (IEC standard) SUS316L material model: IP67 (IEC standard), IP69K (DIN standard)
Connection	Cable type / Connector type model
Cable spec.	Ø 4 mm, 4-wire, (Emitter: 2-wire), 2 m
Wire spec.	AWG26 (0.52 mm, 20-core), insulator outer diameter: Ø 1 mm
Connector	M12 4-pin plug type
Material	Case: It depends on the model. (refer to 'Ordering Information'), lens and lens cover: PMMA

